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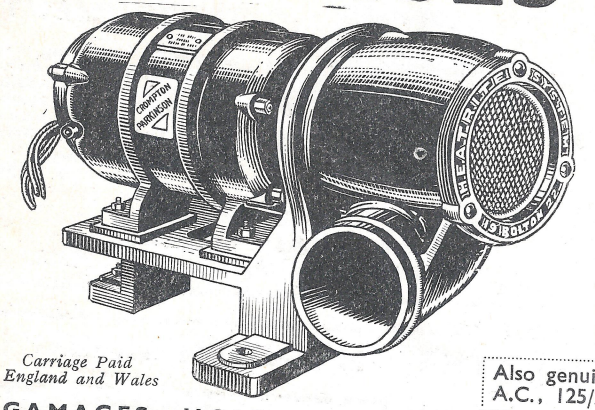

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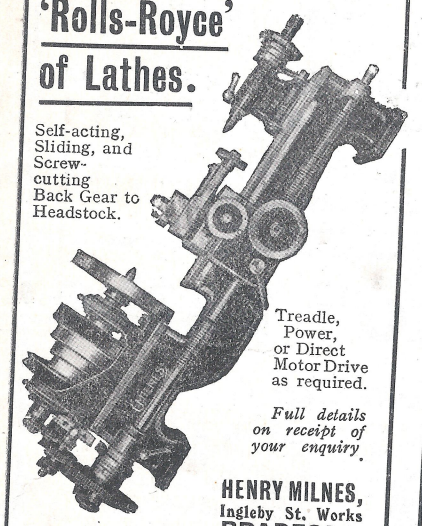

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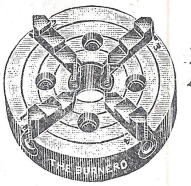

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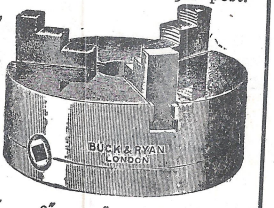

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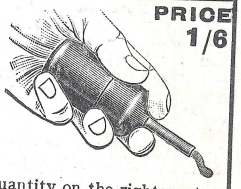

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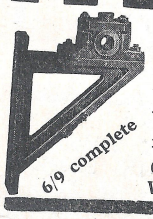

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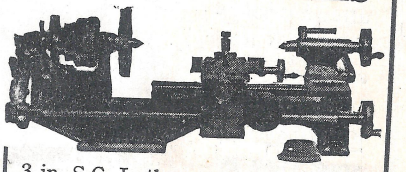

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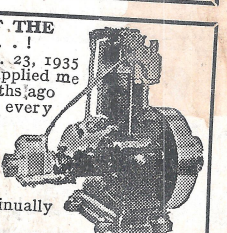

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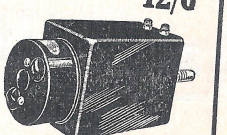

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SMOKE RINGS

The Sydney Society.

BY a somewhat happy coincidence I received a visit from Mr. J. W. Mann, President of the Sydney Society of Model Engineers, just as we were going to press with the illustrated description of the Society's new club house, which appears in this issue. Mr. Mann brought me for my office a very nice photographic enlargement of the picture of the club house with a large group of members in the foreground. "This" he said, "is just a little token of the good-will of our Society towards 'Smoke Rings' and the 'M.E.'" Mr. Mann is very happy about the enthusiasm of his members and the future prospects of his Society. He produced a bunch of photographs showing the varied nature of the members' work. Model power boats and locomotives predominated, and it may safely be said that the work produced in Sydney would hold its own amongst the efforts of model engineers in any part of the world. In speed boats Sydney is literally making the pace for the world, for in the "Whirlwind" they have a flash-steam boat which has beaten all previous records. In fact Mr. Mann told me that this boat, in unofficial trials, has touched fifty miles an hour. But though the Society have some very fast speed boats, their model marine interests cover every type of power boat, and from his pocketful of photographs Mr. Mann produced pictures of tugs, yachts, and liners in great variety. The photographs of locomotives too, which he showed me, demonstrated the skill with which his members embark on this branch of model engineering. The Society were very fortunate in getting His Excellency The Governor of New South Wales to perform the opening ceremony, and also in securing the interest of the Minister for Education, the Hon. R. B. Drummond, who cut the tape to mark the opening of the boating lake. Mr. Drummond remarked that the Society's development was one of the most remarkable examples of self-help that he had ever known. Our pictures this week leave no doubts about the local interest in model engineering which the enterprise of the Sydney Society has aroused. Long may Sydney flourish, and may the lead it has given to the world in model engineering club headquarters be followed in many centres. Mr. Mann is staying in England for a few months and hopes to meet some of the model engineers of the mother country during his visit.

* * *

The Making of a Model Engineer.

WHEN I was chatting with Mr. Mann he remarked that the best model engineers he had known had been woodworkers in the first instance. He said there was something about the finish of a piece of woodwork which set a standard for the metal worker to aim at. This led to a comment from a mutual friend who was present at the interview. He said he was once asked to settle an argument on this very point between a group of joiners and a group of engine fitters. Each claimed a greater degree of accuracy in their work. He solved the problem by first asking the joiners what they used to determine their measurement. They produced a boxwood foot rule. He then asked the metal workers what they used. They produced a micrometer. That

The Hon. R. B. Drummond cutting the tape at the oping of the new boating lake of the Sydney Society of Model Engineers. Mr. Arthur Mathews' modeSS. "Amevati" leads the procession of boats.

Greetings from Japan.

MY New Year mail brought me a pretty post-card from Mr. Y. Ishida, of Sendai, Japan. It bore this message: "Dear Sir, I beg to offer you my congratulation on the New Year. How do you do, Sir? How does your family? I am quite well. In Sendai many snow came down. It is very cold now. Trusting you are keeping quite well.—Y. Ishida." Thank you, Mr. Ishida for this quaintly expressed greeting, which pleases me very much. I reply I would say: "I am quite well, my family is quite well, and in London we are having frost and fog instead of snow. I reciprocate your good wishes very cordially, and regret my inability to expresss my sentiments in Japanese as happily as you do in English."

* * *

The New York Exhibition.

I HEAR that the Eighth Annual Exhibition of the New York Society of Model Engineers will be held in the Society's rooms from February 7th to 22nd, inclusive. Last year the fine show put up by this enterprising society attracted 10,000 visitors. They hope to beat that figure this year. Mr. E. Stuart Fergusson, Secretary of the Exhibition Committee, writes:—The boys are all very busy getting ready for the Exhibition—the fellows on the railroad are trying to get it in bang-up shape, and the Marine gang are sparing no pains on their boats. We have added to the track this year and now have over six scale miles on the "O" gauge system. The Society's rooms are situated in the Knickerbocker Building, 152 West 42nd Street, New York City.

Percival Marshall

For the Bookshelf.

Petrol and Oil Engines (Incorporating "The Petrol Engine"). 4th Edition (London: Temple Press, Ltd.). Price 2s. 6d., postage 3d.

This popular manual formerly produced under the title of "The Petrol Engine" has now, in view of the rapid developments in heavy oil engines at present in progress, been extended in its scope to cover this type of power unit as well. The design and construction of engines for all purposes are clearly dealt with, and illustrated by numerous drawings and photographs. All functional components of engines, including ignition, carburation, lubrication, cooling, supercharging, fuel injection pumps, etc., are fully described and very many interesting examples of latest practice in automobile, motor cycle, aircraft, marine and stationary engines are illustrated. Every care has been taken to make this edition encyclopædic in its scope and fully up to date, by no means an easy matter on account of the rapid changes and improvements which are constantly taking place.

The New Headquarters of the Sydney Society of Model Engineers.

How Sydney leads the World in the provision of a complete Club House and Model Boating and Railway Facilities for its Model Engineers.

ALTHOUGH we have previously illustrated the new club house of the Sydney Society of Model Engineers, we are sure the additional pictures and description we are now able to give will be of the greatest interest to other model engineering societies at home and abroad. We are indebted for this information to Mr. C. S. Mackellar, the Honorary Secretary of the Society. He writes:—

"September 14th, 1935, will go down as the date of one of the most important functions in the history of the Sydney Society of Model Engineers, when the club house was opened by His Excellency Brig.-General Sir Alexander Hore-Ruthven, V.C., K.C.M.G., C.B., D.S.O., Governor of New South Wales.

The Governor, accompanied by his A.D.C., Captain Holford, was received by the President, Mr. J. W. Mann, and the Secretary, Mr. C. S. Mackellar, and after being introduced to the members of the Committee, proceeded to the dais. After the address of welcome by the President and response by His Excellency, the President handed to His Excellency a gold key suitably inscribed with which to perform the opening of the club house.

This, we believe, is the only model engineering club house in existence, and when opened, some 2,000 visitors inspected the building and exhibition in the afternoon.

The building, which is a two-story one, is provided with a meeting and lecture hall, workshop, secretary's office, bath and shower room and all offices, being built of brick with tile roof, and is an imposing structure. It was designed, financed and the building carried out by members of the Society, and we are indeed proud of the completed building.

There are two ponds in the grounds, one 36 ft. and the other 70 ft. diameter, and enclosing the two ponds is a $2\frac{1}{2}$ in. gauge track (double track), and the whole is enclosed by a chain wire fence which allows the members to operate their models without interference. The photograph gives a very clear idea and view of the layout of the grounds.

For information of readers, some figures regarding the project will not be amiss. From the larger pond approx. 350 cubic yards of soil were removed and spread round the grounds to give the necessary elevation and slope, so that everyone present could see the

Photograph taken during the Official Opening of the New Headquarters of the Sydney S.M.E.

railway and the boats on the ponds. To this amount another 50 cubic yards were necessary to complete the scheme, this being purchased. The amount of concrete required to float the bottom of the pond was 47 cubic yards and the wall took 3,000 bricks ; this was treated with cement and silicate of soda solution to render the wall waterproof. This pond holds 53,000 gallons of water.

The 2½ in. gauge track, which is 338 ft. long, has taken approx. 3 cwt. of correct section Vignoles rail (drawn in Sydney), 4,000 sleepers, each sleeper being drilled in jig to take the dog spikes, 28 lb. dog spikes, 4 gross bolts and nuts, and 120 pairs fish plates (the rails are 12 ft. lengths). It is the intention of the Society to lay a third rail on the outer 2½ in. gauge track, so spaced to give a 1¾ in. gauge track, this rail when not in use for gauge 1 to be used to electrify the 2½ in. gauge track.

There are only three sets of points, one acting as a cross-over from one track to the other, and the remaining two sets to the turntable and the carriage sheds ; the latter are not yet completed.

Provision has also been made for a 7¼ in. gauge passenger-carrying track to encircle the whole of the grounds, and this should be an added attraction.

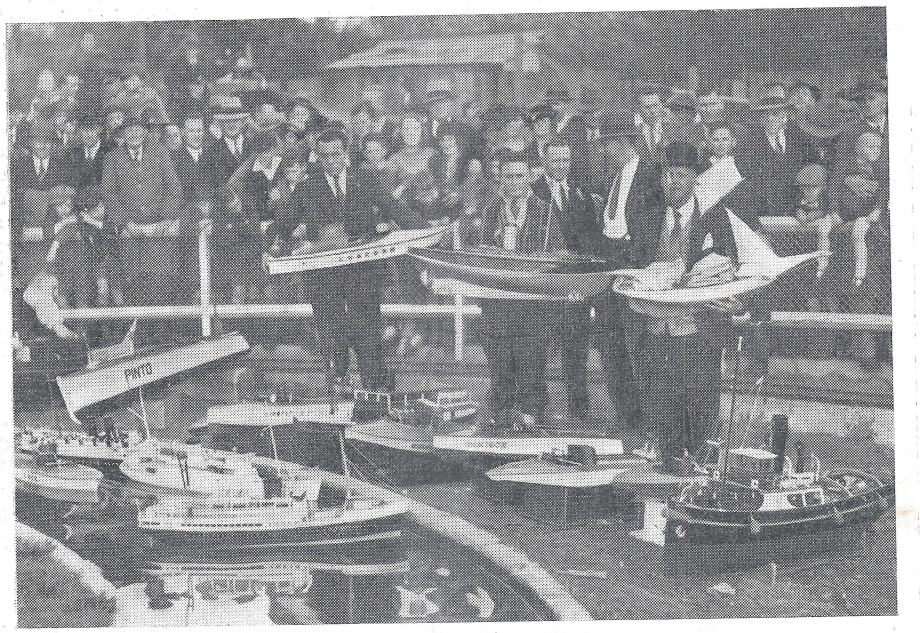
A boiler has been erected with steam pipe line to the stationary model bench, provision being made for 12 models to be coupled up at the same time.

There was an excellent exhibition of models comprising many branches, viz. loco., marine, petrol, old and new stationary models, model of lift bridge with rails in position and a model of a cement hoist.

The gem of the exhibition was an American 'Pacific' loco. 2½ in. gauge almost complete, designed and built by Mr. A. W. Lofts, of the Society.

Another model which caused considerable comment was a three-cylinder loco. chassis, cylinders cast *en bloc* with Baker valve gear for the two outside cylinders and Gresley's gear operating the valve for the inside cylinder. The cylinders are "man" size, being 1 in. by 1¼ in., and with a motor car pump attached to the steam pipe, carried a 12 stone man sitting on the chassis (some acrobatics), so it is difficult to estimate what this will move when completed. Another feature of this chassis is that all the wheels and rods have roller bearings, the builder using gramophone needles for rollers.

There was also a wonderful collection of boats and speed boats, and during the afternoon, attempts were made on the various speed records.



Model Speed Boats and Liners at Sydney.

The best time for petrol speed boats was put up by Messrs. Ferguson and Bryden's 'Alpha' attaining 29 m.p.h., and winning the 'Milford Trophy.'

The flash steam boats came in for special mention, as three did over 35 m.p.h., but the outstanding feature of the day was when Mr. Ron Cowen, with his 'Whirlwind,' succeeded in lowering the world's record for a metre boat. This craft did the course, which was checked 202.3 yds., in 9 1/5 secs., making the speed 44.997 m.p.h., which we claim as the world's record. This speed was made in the larger pond. A description of this boat is as follows: Length overall, one metre, made of ⅛ in. plywood, stepped hydroplane ; engine, 2-cylinder s.a., 1 1/16 in. by 1 1/16 in. steel cylinders with C.I. pistons fitted

with two rings each and water cooled; boiler, 42 ft. of 5/16 in. steel tube with rustless steel casing; lamp, twin burners, tank has two compartments with a reducing valve between them to maintain a constant pressure in tank containing fuel; fuel, benzine; propeller built-up steel.

On one occasion this boat did two laps of the pond in 5 2/5 secs., which is over 50 m.p.h., and then seized up. The incident caused Mr. Cowen to experiment with water-cooled cylinders, which he considers a huge success.

This speed is not considered as the boat must do three laps to cover 202.3 yds., which is the minimum distance recognised.

The membership of the club is growing, and in the very near future we should have 200 members. At the present time our membership totals 158.

I would like to see the lead given by our Society taken up by the societies in other parts of the world, as model engineering is now receiving the recognition it deserves, and the erection of club houses will do much to enhance the prestige of model engineering societies."

SHOPS, SHED & ROAD

A Column of "Live Steam."

By "L. B. S. C."

A Little "Spirit Schemer."

Turning to small practice and some more queries, my own experience proves that it is not possible to lay down a hard-and-fast rule as to how much water a given amount of coal, oil or spirit will evaporate. On my own line, engines identical in firebox and cylinder dimensions have given results which differ to an unbelievable extent. A 2½ in. gauger with a narrow firebox has hauled a single passenger up and down for over 25 minutes on one firing, whilst a similar engine which somebody brought for repair, hauling the same load, needed firing every fourth or fifth trip, and consumed a large quantity of water; yet another used a similar amount of fuel, but owing to difference in boiler proportions and arrangements, evaporated much less water, despite the excessive coal consumption. Same thing has occurred with liquid fuel. A three-cylinder tender engine with "Helen Long's" boiler and "works," has maintained 70 lbs. pressure continuously on the heat supplied by a small axle-dodger petrol burner; whilst an engine of similar size but with a wide firebox has taken all the heat generated by a No. 1 Primus roarer burner (pretty fierce, as most folk know) to do exactly the same work. I have taken a trip behind a gauge 1 engine with three spirit wicks; but another with four has had a job to keep going with no load!

From the above, it doesn't need Sherlock Holmes to deduce that the whole question of turning the "therms" in a given quantity of any kind of fuel, solid or liquid, into useful work, entirely depends on the engine as a whole; whilst the question of how much water a given amount of fuel will evaporate, is governed entirely by the boiler. If you have an oil burner or a spirit lamp working in a boiler of the water-tube type, and the outer casing is big, and of a shape that is easily cooled by the air as the engine runs, it stands to reason that much of the heat is wasted, and the fuel to water evaporation ratio is much less than would be the case where every possible precaution against heat loss is taken.

The accompanying photo. shows an engine which was the outcome of some experimenting on the lines indicated above, and the results are pretty conclusive. She is only a gauge 0 job, a simple 4-4-0 with two inside cylinders 5/16 in. bore and 9/16 in. stroke; the valves have an appreciable lead, and a maximum cut-off of 60 per cent. The boiler is practically "to scale," as the photo. shows; the outer case is 6¼ in. long and 1½ in. diameter, the inner barrel 4¾ in. long and 1¼ in. diameter, only leaving a small flue space between; the maintained working pressure is 50 lbs., heat being furnished by a small three-wick spirit burner. This pocket edition of a locomotive hauled six

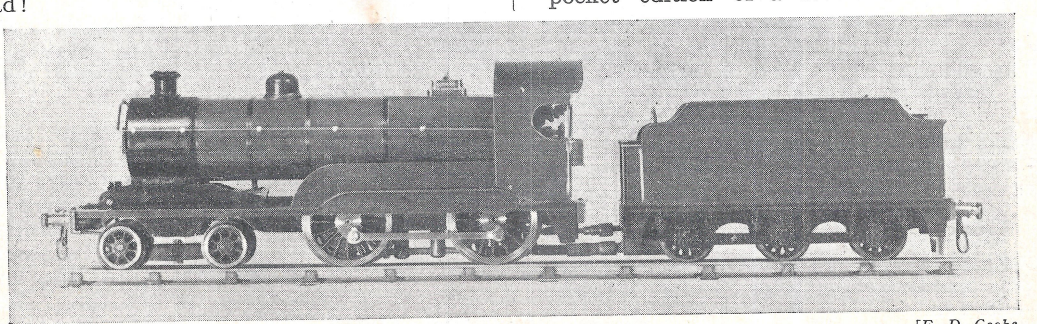


Photo by] A Gauge "O" Non-Stopper. [*E. D. Cooke.*

heavy wooden coaches nonstop for a distance of 1,280 feet, sizzling away at the safety valve the whole time, on an open-air track with a nice cold east wind blowing. The fuel and water were very carefully measured, and it was found that the evaporation ratio was 1 to 5 ; that is, on this locomotive, *one cubic inch of spirit will evaporate five cubic inches of water.* The merry arab responsible for this job is Mr. E. J. Cooke, of Hastings, and the fine show put up by the tiny engine bears out some interesting facts which I discovered when altering a commercially-made 4-4-0, and a ditto 4-6-2, so that they kept going with loads of sixteen and twenty-seven coaches respectively. Both these engines, though running on a gauge 0 track, were considerably bigger than the little engine illustrated, and I did not check their fuel and water consumption, so cannot make any worth-while comparison.

When the gauge 1 4-4-0 illustrated in December 26th issue, has been in the shops and got her new cylinders, I hope to be able to make a few fuel and water consumption tests with her, and see what sort of efficiency we get on the particular type of boiler with which she is fitted. Even in her worn-out condition, she certainly doesn't appear to be heavy on either spirit or water, and she can certainly steam and pull.

Got a Few Minutes to Spare ?

Good ; then let's trot along to the lobby and have a few minutes' chinwag about consumption ; and might I remind our worthy brother who has just snaffled the tea-bottle and taken it up in the corner, that it is fuel and water consumption we want to discuss, and *not* how many gulps he takes to the gallon ! Well, first of all, we'll answer a query ; some brothers have come across my references to " coal premiums " in back notes, and want to know about them. In the old days on the London, Brighton and South Coast Railway, each engine, wherever possible, had its own crew ; and to encourage the drivers and firemen to run their engines as economically as they were able, a bonus (popularly known as " coal money ") was paid every month to all enginemen using less coal than a fixed standard allowance. It was generally understood among the locomotive men that old Billy Stroudley took the average coal consumption over all classes of engines on various kinds of traffic, and struck what he considered to be a fair average ; but however it was computed, the allowance worked out at 17 lbs. of coal per mile for the engine, and $1\frac{1}{4}$ lbs. for every coach or wagon in the train. When the system was first introduced, much of the passenger stock was four-wheeled, and a coach was thus equivalent to two axles ; drivers booked up their loads as " ten on," " twelve on," " fourteen on," etc., according to the length of the train. The allowance for a train comprising an engine and ten coaches, would thus have been 17 plus ten times $1\frac{1}{4}$; total $29\frac{1}{2}$ lbs. of coal per mile run.

When the six-wheeled coaches, and later the bogie coaches, took the road, the same reckoning still held good, a six-wheeler counting $1\frac{1}{2}$, and a bogie as two ; so that if a train consisted of, say, the engine, seven bogies, two six-wheeled vans and a horse-box, the driver would book " eighteen on," and the coal allowance for working the train would be $39\frac{1}{2}$ lbs. per mile. This was ample for an engine in good fettle ; and as most of the enginemen knew their job and could do it, they usually ran on much less, being paid at the rate of one penny per cwt. for all the coal they saved. It doesn't sound much, true ; but as the miles rolled by, the pennies mounted up ; and it was no uncommon thing for a driver and fireman to share thirty shillings or more when the end of the month came around, and the lists were made up. This welcome addition to the engineman's " pay-ticket " was not to be sneezed at in the " good old times " when even an express engine-driver had to work ten or eleven hours to earn eight shillings, which was the top rate per day.

Naturally, in order to earn the coal money, drivers and firemen had to " work together," as well as do their own separate jobs skilfully; nothing could be done without " complete harmony on the footplate." If you took a trip with a pair of enginemen who were habitually well up the coal list, you'd find the driver would run with the regulator wide open, and the lever as near to the middle as possible, consistent with time-keeping. The fireman would work on the "little-and-often" system of firing, keeping a saucer-shaped fire thin enough to allow the light blast to pull enough air through it to ensure complete combustion (with consequent absence of smoke) and maintenance of steam pressure. A thick fire would smoke, and smoke meant coal-money going up the chimney in the form of unused " therms "; whilst the corresponding drop in the steam pressure meant that the driver had to " drop his lever " a little, to keep the speed up, with consequent heavier blast, more forcing of the fire, and so " another round of the vicious circle." Any practical engineman who knows the trick of getting the utmost out of a full-sized locomotive without forcing her, will understand why I always maintain that the "barn" firebox of excessive depth, and the oft-advocated thick fire, is entirely unnecessary on a little locomotive ; and that a baby engine will give of its best if handled exactly the same as her big sister, is a fact I have proved again and again on the track. She must, however, have a proper valve gear correctly timed, and other essential components all O.K.

District superintendents sometimes tried the experiment of putting a " top of the list " driver with a " bottom " fireman, and *vice versa.* This would probably move their positions nearing to the middle during the ensuing month, after which the " top " driver would have educated his fireman up a bit, and would resume his place on the list. The " top " fireman would meanwhile have most likely gone and had a quiet but forceful inter-

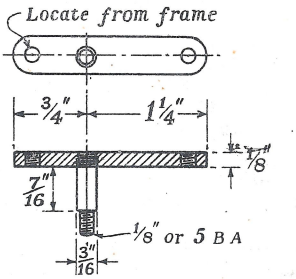
view with the "gaffer," and been paired off with another driver, who was a little more skilful with his "handles." When a pair of men teamed up well, however, it was policy to leave them alone; the low maintenance costs of their engine was sufficient justification if nothing else. When a top list fireman became driver in due course, he could always be relied on to teach his fireman all the "tricks of the trade," as you might say, and so carry on the good work.

It was astonishing what some of the enginemen would do to take a high place on the coal-money list. The Brighton coal was usually good, but now and again a truckload of what we called "dum-dum" would find its way on to the coal road, and an awful scream would go up to "High Heaven" from the drivers and firemen of the engines which happened to be coaled up from it. The coal cranes usually loaded up bunkers and tenders direct from the coal wagons, and naturally a lot was upset. At the end of a shift, the coal-stage hands would shovel up what had been spilt and load it into two or three spare crane skips. If any of the "super-coal-schemers" were in the yard with their engines and happened to see these skips of sweepings they'd be on the coal-road in two wags of a dog's tail, and clamouring for the contents of the skips! Why?—simply because they were not "booked out," but given buckshee to any driver who would take them; and as each skip represented a clear "profit" of at least tenpence to the enginemen, they didn't care a bean whether the contents were Welsh, hard, Yorkshire, dum-dum or even a mixture of "slate" and kitchen cobbles so long as they'd burn somehow. On a tender engine it could be dumped at the back, raked down, and fed into the firebox with the good coal; and it made very little difference to a good engine's free steaming. Eh—what's that? Not guilty, my lord! Well, I guess you know now all about what a coal premium was, and how it was earned—and wangled!

"Maisie" (*Contd.*)—Reversing Connections.

As the firebox on "Maisie" will be too wide to allow a reverse or reach rod to be directly attached to both weighshaft and cab lever, we have to take the connections underneath the ashpan, and the sketches show the first stage in the "transmission line." A bell crank is attached to a bracket bolted to the bottom of the frames between the coupled wheels, and the horizontal arm of the bell crank is connected to the rear arm on the weighshaft by a double-forked connecting bar.

The bracket is a piece of $\frac{1}{8}$ in. by $\frac{3}{8}$ in. flat mild steel, 2 in. long, and rounded at the ends. A 3/16 in. by 40 hole is drilled and tapped $\frac{3}{4}$ in. from one end, and into this is screwed a 3/16 in. silver steel pin, the outer end of which is shouldered down and screwed $\frac{1}{8}$ in. and furnished with a nut and washer, see sketch. The bell crank is made from the two pieces of flat steel same size as above, the two arms being identical; the small ends are drilled and reamed $\frac{1}{8}$ in. and the large ends drilled 9/32 in. Chuck a piece of 5/16 in. steel rod, centre, and drill No. 14 for about $\frac{3}{4}$ in. depth, turn down $\frac{1}{4}$ in. of the end to a diameter of 9/32 in., drive fit in the crank arms, and part off 7/16 in. bare from the end. Drive the crank arms on, having them at right angles, the inside one pointing to the right when the outer one hangs straight down. Give the joints a taste of Boron compo., paste and braze with a touch of

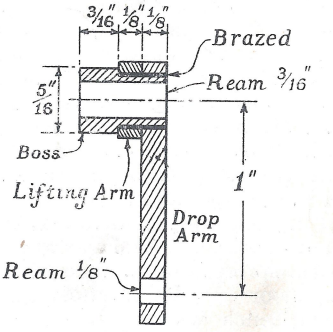


Bell-crank Bracket.

brass wire. Clean, polish, and poke a 3/16 in. reamer through the hole in the boss.

Drill two No. 30 holes in the frame, 3/16 in. from bottom edge and about $1\frac{5}{8}$ in. apart, between the spokes of the coupled wheels, and countersink them. Clip the bracket to the insides of frames with a toolmaker's cramp, with the pin exactly underneath the weighshaft. Run the drill through holes in frame and make countersinks in the bracket; remove, drill and tap $\frac{1}{8}$ in. or 5 B.A., replace bracket, and fix with countersunk screws.

The connecting link is made from a piece of 5/16 in. square mild steel. Mark two points 2 3/16 in. apart; centre pop, and drill No. 33. Slot down each end as described for

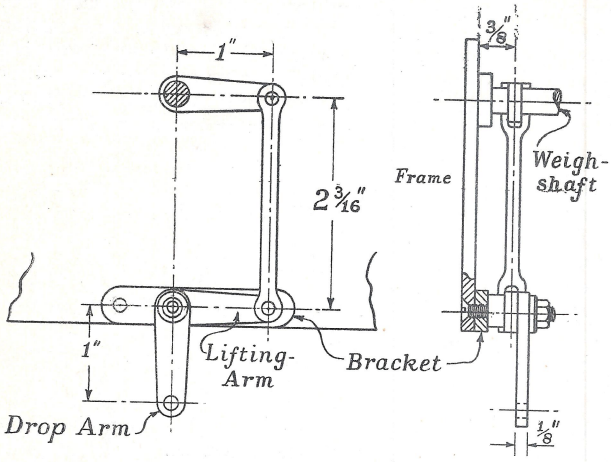


Section of Bell Crank.

lifting links, etc., and mill or file centre part of rod to shape; then form the forks to the same shape as the ends of the eccentric rods, as sketch. Ream the holes $\frac{1}{8}$ in., and polish the complete link with fine emery cloth. Connection is made to the bell crank by a plain pin of $\frac{1}{8}$ in. silver steel, riveted over each end just sufficiently to prevent it falling out; the connection to the weighshaft arm is by a piece of $\frac{1}{8}$ in. silver steel with a nut on each end, which allows of easy removal when needed.

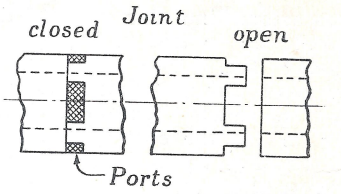
Three-piece Piston-valve Liner.

A brother out in Egypt sent a sketch of a piston-valve bushing which he is fitting to his locomotive, and although he wrote on it "Don't let Inspector Meticulous see this!"



"Maisie's" Intermediate Reverse Gear.

it is certainly worthy of mention as a wheeze that works. The liner is made in three pieces, the two end sections being short, and having the exhaust outlets milled in the sides; the centre section is longer, and the ports are milled in each end, so that it looks like a double-ended "castle" nut. The depth of the serrations is equal to the required width of the ports. When the liner is assembled in the cylinder casting, into which it is pressed in the usual way, the plain edges of the end pieces butt up against the serrated edges of the centre piece, thus forming what is to all intents and purposes a continuous liner with two



Three-piece Piston-Valve Liner.

rings of rectangular clean-cut ports around it. The ends of the sections are truly faced, and the joints are practically invisible. Although our brother doesn't say if he reamed the whole bag of tricks after assembly, I should adopt this course if using the three-piece liner, as it would not only make the joints line up perfectly, but ensure all three sections being exactly the same diameter.

First Steps in Model Engineering.

Workshop Advice, Experience and Philosophy for Readers of all Ages.

By "INCHOMETER."

Utilisation of Space in Workshops.

Amongst the queer happenings of everyday life is the apparent volition of inanimate objects to secrete themselves, maybe for a long period, and then to show again when one is seeking a similar or an entirely different thing. Everybody meets this experience, and we, doubtless, all have a fellow feeling for one another in knowing the exasperation induced and time expended through searching for a detail of work or perhaps a tool which has, with seeming maliciousness, deliberately hidden itself in obscurity. You have made a small screw, or a spring, for example, then dropped it on the floor or even carefully placed it on your work-bench where you knew that you would find it, but alas, the perverseness of that "inanimate" object, decides that you will search in vain. With small tools likewise, you know perfectly well that on a previous occasion you replaced one in its usual box or drawer, but when you require that tool again, lo, there is every other in evidence, yet the particular article has decided to live with a different tribe, you will discover it automatically at some later period when you are looking for something else. This instinct and habit is different from the sporting mood and playfulness of small studs, screws, washers, fittings and so on which fall into boilers, the bilges of model ships and boats, tanks, steam ports, crank chambers and other "awkward-to-get-at" situations. One, at least, knows where the thing is and can concentrate entirely upon a plan to recover it. A model engineer friend who is constructing a scale model of an old-time ship complete with all interior structure and equipment has provided himself with a long surgical forceps expressly to pick up small objects which inevitably fall into the bilges and would be otherwise troublesome to pick up owing to the complexity of a maze of inside woodwork. This forceps has a short hinged jaw at the extremity, it opens against the action of a spring and is worked by pressure of the user's thumb upon a button at the finger rings: with the aid of this appliance, he can readily pick up any object that has fallen inside the hull. Some of the appliances used in surgery and dentistry are very adaptable as tools for use in model engineering. The elusive collar stud is a standard joke, those who practise mechanical work in home workshops are familiar with the elusive screw or other small detail, tool or accessory, which, at times, is not in the place where we were certain to locate it. Likewise, at desks and writing tables, notwithstanding a habit of orderliness, the elusive letter, illustration or document seems to be a certainty to demonstrate an occult volition

existing in the assumed inanimate, or else fallibility of the human mind. Or may it be that some personal influence of its maker has entered subconsciously into the metal or tool, or into the very ink and paper of the letter, and that the elusiveness is actually preordained for a specific and benevolent purpose? Now having read, and perhaps wondered at the drift of my somewhat metaphysical preamble, you shall know the cause of its inspiration and the object of the paragraph heading; two "elusive" letters, one from Mr. Frederick Massey, of Toronto, in Canada, and the other from Mr. A. E. Z. Spencer, of Cape Town, South Africa.

"Little Gems of Craftsman's Wrinkles."

The first-mentioned letter, addressed to the Editor last midsummer, was passed on to myself, after acknowledgment, on account of the writer appreciating, amongst other matters, my "First Steps" articles, by the following generous message "I like the articles by 'Inchometer,' it is a kind of clearing system for little gems of craftsman's wrinkles; I hope the series will long continue." With, I feel happy to imagine, due and beneficent intent, the letter hid itself amongst irrelevant documents, so that my memory lost track of its existence. Then, seemingly for antidote to the mood of self-doubting expressed in my last article, cheerily appears, though I was not seeking or concerned about it. With additional circumspection, it selected a time when, almost simultaneously, I receive a long letter from my friend Mr. G. W. Parsons, of Redhill, in which he mentions having several interesting subjects to help in my articles. Already I am indebted to him for the twist drill grinding jig, lathe tool holder, and a friction drive. Surely these are amongst the "little gems", and the devices in store will add to the cluster.

Rusting of Tools in Workshops.

The letter from Mr. Spencer contains a definite question, as follows: "Can any of your readers advise me as to the best way to arrange the space at the back of a lathe? My lathe is mounted on a bench one foot 9 inches wide and there is about 12 inches between the lathe and the wall." He has arranged some shelves in his workshop and suggests having various drawers, but apparently could not decide upon the means which would economise space to the best advantage. This enquiry was transmitted so long a time back that Mr. Spencer, in all probability, has settled his difficulty The letter, however, decided to become lost between the leaves of a collection of pamphlets and to emerge, unsought, in synchronism with that from Mr. Massey.

Storage of small tools, materials and accessories belonging to one's lathe and other machines certainly is an important matter, but seemingly, to my view, the workshop user must be "a law unto himself" in deciding upon system and arrangements, these will be dependable upon circumstances obtaining. By discussion inside the workshop itself, one could offer suggestions and possibly tender helpful advice. During many years, I have been experiencing the common problems of arrangement, storage, warming, lighting and protection from dampness in my own garden workshop. Like unto, probably, the majority of home workers, I have mainly used drawers in which to keep things. A valuable receptacle is a large tool chest of ancient origin, seems to be a ship's carpenter's tool chest, contains drawers and partitioned spaces. My experience is that articles kept in drawers remain fairly impervious to rust; with regard to accessories, I have lately contemplated the merits of cupboards, not one or two large fellows, but a number of small size, each for holding specific contents. In the works where I served my apprenticeship, a cupboard was provided to every lathe and other machine; in each, all tools and the smaller accessory appliances for that machine were stored. A drawback is space required for the door to open, but this may be obviated by a two part sliding door; a flexible shutter, as used for roll top desks, could be used. Cupboards cultivate a habit of putting things back into their places after use, chucks, tools and loose gear not to be stored on shelves; rather use drawers than a multitude of boxes. If shelves are a convenience, have them in cupboards, for storing tools, chucks and the like appliances. A periodic examination of contents is advisable to detect rusting or other corrosion. The sooner attacks of these enemies are discovered and repulsed the smaller will be the given damage. You, reader, are not the only model engineer who experiences workshop troubles, don't let them be tribulations; herewith is consolation from Mr. Massey's welcome letter, "It is nearly 100 degrees in the shade here to-day, and the humidity has got my pipe tobacco too wet to smoke. Last night I cleaned a lot of unwelcome rust off my tools; heat and humidity seem to work faster than English dampness, and how it penetrates!!" If he should read my remarks, perhaps he will send along a few lines giving his experience in combatting the rust evil. Certainly he will know that I am encouraged by his so pleasantly worded comment about "First Steps", to keep the series going with, as the legal gentlemen express, my "best endeavours."

A Silver Soldering Hint.

I wanted to bind a pump barrel to its valve-box for silver soldering recently, and used some nice, bright, new, iron wire for the job.

This was just ignorance on my part; I know now that its brightness was due to tin or something similar, because when the job was done and I came to take the wire off for cleaning up, I found that the brass barrel was deeply pitted where the wire had been.

As it happened, the pump was pretty thick in the walls, and its strength is not affected very much, but if it had been a more delicate affair, it would most certainly have been ruined. Next time I shall use some old rusty wire and make certain.

R. D. QUILLIAM.

The Work of Norwich Model Engineers.

By GEO. GENTRY.

IN the Oct. 31st, 1935 issue of the MODEL ENGINEER the editor gave a preliminary notice of the results of the exhibition organised at Norwich by the Norwich and District Society of Model Engineers, which was open to the public from the 3rd to 5th inclusive of October last. The following comments will give the general reader some idea of Norwich activities in the model engineering line.

The exhibition was officially opened by the Lord Mayor of Norwich, supported by the President, Mr. H. O. Clark, and with the Society's Chairman, Mr. G. W. Barker, in the chair.

The exhibits as a whole point to the preference among Norwich modellers for models of steam and other engines, including rail and road locomotives. The exhibits were grouped in five sections, which were as follows:— Scholars' Open Competition 26 exhibits with only 1 model engine included; a Loan section of 8 exhibits illustrating the use of models in commerce, mostly demonstration models of cranes, drainage pumps, and ventilating fans, with one exhibit of traffic signals; the "Open Competition" of 18 exhibits, of which 8 were models of engines; the Members' Competition open to members only, 61 exhibits in all, of which 51 were models of engines. There was also a large Loan Section of 93 exhibits, 60 of which were models of engines, and 9 were models with electro-magnetic engines, and nearly all shown running either under air, or low voltage electricity.

Mr. J. R. Gladden of Stalham, was awarded the championship challenge cup in the Members' Competition for his 3½" gauge passenger hauling locomotive 2-6-0 "Mogul," which has worked over hundreds of miles of track, and was running in the exhibition. It is somewhat imperfectly seen at the left hand rear in Fig. 1.

In the Scholars' Competition, quite half of which were examples of woodwork, Mr. A. Beaumont, of King's Lynn, took the first prize with his miniature waterline model of the "Bremen," a photo of which is given in Fig. 2.

The runner up for this honour was his own model of a T.B.D., awarded "Very highly commended," which was matched in the same award with the "Veneered Box," made and exhibited by W. E. C. James, of Norwich, and "A Model House," by R. J. Ayers, of Norwich. There were 9 highly commended, 7 of which were woodwork examples, one a model engine, and one an exhibit of tools.

In the Open Competition the first prize was divided between the table engine of Mr. R. W. Wood, of Leeds (illustrated by supplement plate in the "M.E." of Jan. 4th, 1934), a past winner in the "M.E." Exhibition, and the 4-masted sailing Barque of Mr. R. Neville, of Nottingham, which we believe has been successful also at Nottingham. "Very highly commended" was awarded to Mr. F. Smith, of Pinxton, for his double exhibit of a "Steam haulage engine" at Pinxton Colliery, and of a 2-cyl. table engine, which worked on an incline at Riddings. The other V.H.C's. were a Norfolk sailing punt by Mr. W. E. Mollett, of Lowestoft, a very fine piece of work, and complete wireless apparatus, transmitter and receiver, by R.N. Wireless Auxiliary Reserve, Norwich Units.

The Members' Competition was divided into seven classes. In class A (Locomotive rolling stock and equipment), through the with-

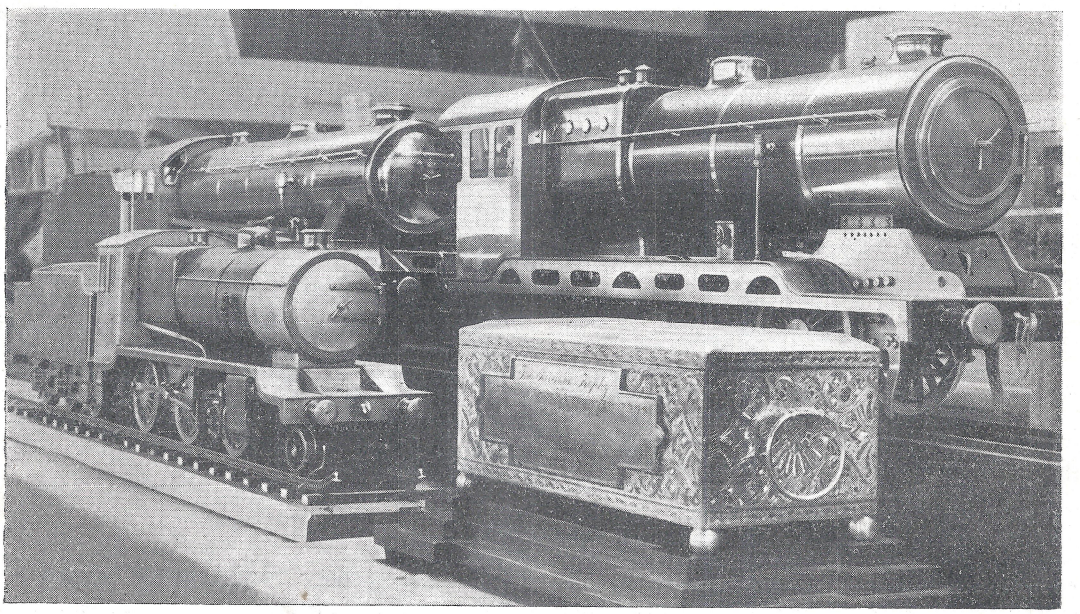


Fig. 1. Mr. Hill's "Dyak" Loco. with the Trophy won in London, and Mr. Gladden's two Loco Models at the back.

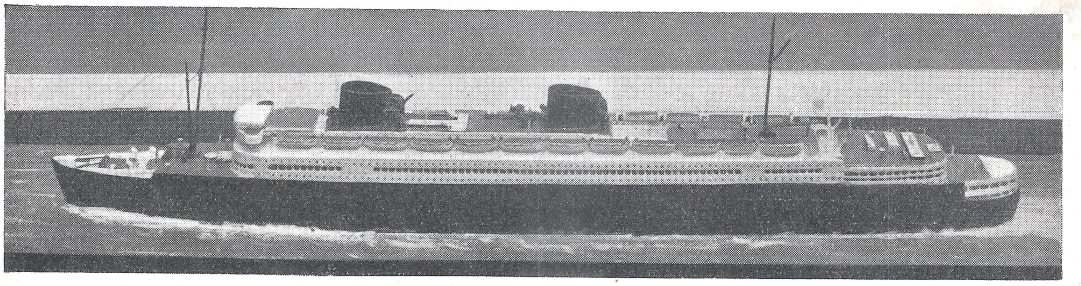
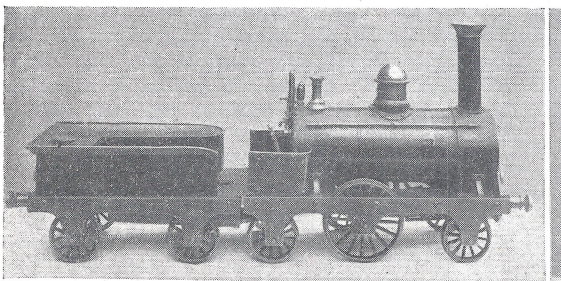


Fig. 2. Mr. Beaumont's winning Waterline Model of the "Bremen."

drawal from top place of Mr. Gladden's "Mogul" to receive the cup, the first prize went to Mr. G. R. Stevenson, of London, for his ¾" scale G.E.R. loco., "Wroxham Broad," which did yeoman service on the track. V.H.C. went to Mr. J. R. Gladden for his 0-6-0 G.E.R. goods loco. This model in the judges' opinion was, for workmanship, the best job that competitor had in the show, but it was neither complete, nor had it any running record. It is seen in Fig. 1 behind and above the trophy. The other two "V.H.C's." went to Mr. R. S. E. Hill's "Dyak," which also did some successful running on a track of its own. Its history is well known to followers of particulars of "M.E." Exhibition competitions of last year, and to Mr. W. F. A. Way, Hon. Sec. of the Society of Norwich, for his electric locomotive, which has also had high award in our London Exhibition. There were four "H.C's." in this class, two to Norwich members, and one each to Newmarket and Lowestoft members. One of these, Mr. R. Way (Mr. Secretary Way's brother), obtained the recognition for his goods train with colour light signals and control.

Class B covered stationary engines of all kinds. Mr. H. J. Wyatt, of Thorpe, was the first prize winner for his 1" scale working model of a "Grasshopper" engine by Easton and Amos (Erith 1856), which till lately was working at Thorpe. A beautiful piece of work, illustrated here in Fig. 3. Mr. Wyatt is a practical engineer, and it is understood made this model (largely built-up) from a photograph which is one reproduced in slide form in Mr. H. O. Clark's well-known set of transparencies of old engines and machines.

Mr. Wyatt's success was closely followed by Mr. J. E. Dewhurst, of Reedham, whose compound "Robey Undertype" engine and boiler secured V.H.C. instead, and the only other "V.H.C." was awarded to Mr. G. R. Cross, of Norwich, for a 1/16 h.p. I.C. engine geared to a model grist mill. The four "H.C's." went, respectively: one to Mr. R. W. Wright, of Norwich, for a model D.A. twin cylinder reversing oscillating, steam deck winch, two to Mr. Wyatt, the prize winner, and one to Mr. Dewhurst. All steam engine models. Mr. Cross' award was for the only I.C. engine.



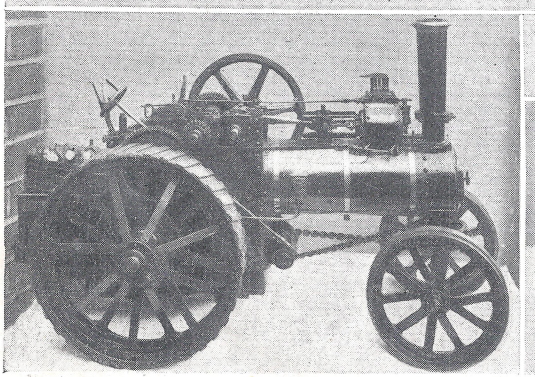
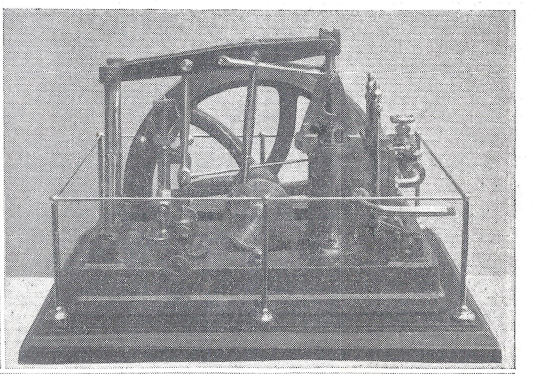


Fig. 6. A Loan Model early trade Loco. from the "Bower" Collection.

Fig. 4. Mr. Dewhurst's Model of an 8 h.p. Fowler Road Engine.



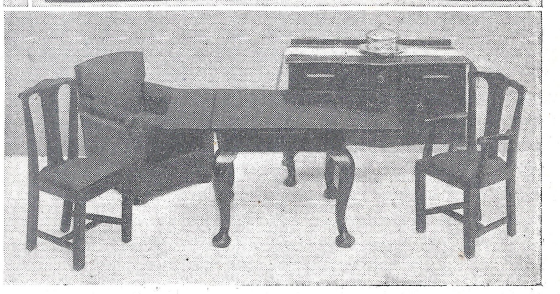


Fig. 3. Mr. Wyatt's Model of the Thorpe "Grasshopper."

Fig. 5. Dining Room Furniture from Mr. Ward's Model Dwelling House.

Traction Engines.

Class C was devoted to traction engines. There were only three entries, although in the whole exhibition there were as many as ten traction and portable engine models of the road and agricultural varieties. Two of these were by Mr. J. E. Dewhurst, of Reedham, and the other one, by Mr. G. R. Cross, of Norwich, which was unfinished. Mr. Dewhurst was successful for the prize with the model in Fig. 4, a very fine example of a single cylinder 8 h.p. "Fowler" engine with compensating gear, winding drum, and brakes. This is one of the finest traction engine models yet seen by the writer. In spite of the fact that Mr. Dewhurst does not claim sole making of this model, it could not be passed over, as its present form is largely due to the reconstruction and addition ability of the exhibitor. Like Mr. Wyatt's "Grasshopper" it ran—off road gear—throughout the exhibition on compressed air, during which all the controls had to be wired up to prevent enthusiastic visitors testing it. With a flexible air lead it travelled about the floor, when on road gear.

Ships and Power Boats.

Class F assigned to ships, power boats, etc., was scarcely representative, and the only entry did not come up to award standard. Although, in 1934, the available ship models were good, and got good recognition, last year Norwich members seemed to go more stationary engine and locomotive than ever. It is up to those marine experts from Yarmouth and Lowestoft to set this right during 1936.

Class G, a new class, devoted to scientific instruments, held only one entry, which was so good that it was awarded the prize. Mr. E. Hood, of Lowestoft, gained this with a working example of a Stroboscope which, running under low voltage battery current, actually demonstrated its optical capacity on various flywheels of running models. This little hand instrument carried its own electric motor.

Class H devoted to tools, had only four entries of which three obtained recognition. The first prize went to Mr. S. W. Gilmore, of Norwich, for an excellent example of a small lathe of the "Horological" type. "Very Highly Commended" to Mr. E. Feek, of Oulton Broad (Lowestoft), for a tailstock tool turret. An excellent job and very well finished.

Miscellaneous Models.

Class I, miscellaneous, presented a problem to the judges. The entries, 14 in number, ranged from an electric clock to a model hand loom, and included in this range such diverse subjects as a working model of a windmill sail and a model house. The last mentioned, however, was not at first considered as eligible, but on conclusive proof that it was, was entered and solved the problem of the first prize right away. It is a very fine model of an ordinary suburban dwelling house, fully furnished, made and exhibited by Mr. R. E. Ward, member of Norwich. It was not possible to make photographs of the full exhibit, but Fig. 5 shows some of the dining room furniture.

No detail has been missed, and even the "bear" rug of the sitting room fireplace is made of the skin of a mole, or other small animal, with the head stuffed and set to resemble a bear's head. Or so it seemed on inspection, it was so realistic. The table in the dining room suite is fully extensible, and functions, on closure, exactly as do modern tables of this construction. Note also the Chippendale dining and arm chairs.

"Very Highly Commended" in this class went to Mr. W. Cooper of Mileham, for a set of patterns, with which was included the I.C. 2-stroke engine made from them. Mr. H. O. Clark exploiting his well-known speciality of windmills, took a V.H.C. for a model of a special type of sail, and another for his frame of photographs; while the final V.H.C. was awarded Mr. B. Dex, of Norwich, for a model hand loom.

Loan Section.

The Loan Section which made up something like a lesser half of the total exhibits, is a very strong point with Norwich members. Indeed, the interest in genuine old time and historic models and their expert finding and restoration has such a vogue with these Norfolk modellers, that it is proposed, in later exhibitions, to found a competition section devoted to the finding and, more expecially, correct restoration of old-timers, being probably the only competition existing in which the competitor must *not be* the original maker. The section was so large and complete, that anything like an illustrated or detailed description is out of the question. The writer is only able to show here a final photo Fig. 6, which is a very complete example of a high class trade locomotive model, of the late middle of last century, reminiscent of the work of Wood, of Oxford Street, or the original "Model Dockyard" of Fleet Street. It is from the "Bower" collection, and spent most of its exhibition time upside down in a special cradle with the fully link motioned inside engine gear running on air.

There is no mistake about the quality of model enthusiasm in this corner of East Anglia, but the writer has one criticism to offer. It is the habit of the Norwich Exhibition executive to encourage members to show partly finished work, in order to enable fellow members to study methods of construction. This is excellent and should be encouraged. It is, however, also the rule that, all members' work shown goes automatically into competition. This seems rather hard, because, under no reasonable conditions can the same exhibit take more than one award from the same annual show. Nor by right can it be again entered.

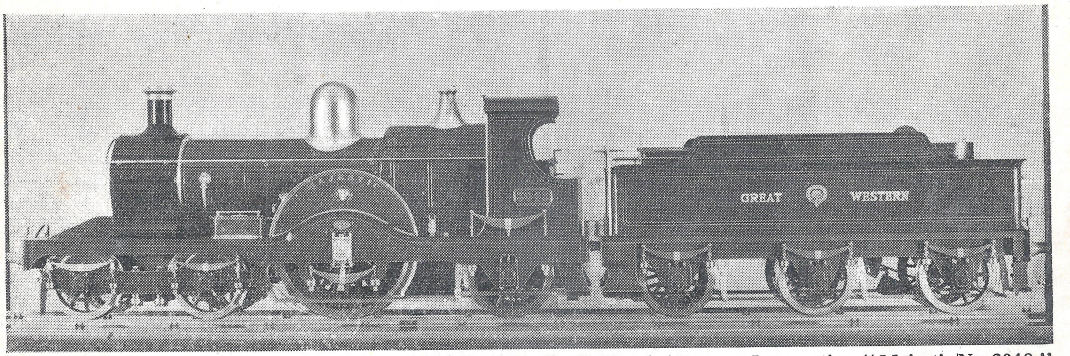
It may be that the Norwich executive will revise their intentions in this respect, but the hint is offered here that members may be allowed to postpone competition with incomplete work, even though exhibited. In any case, Norwich and District had much to be proud of in their latest show.

A Fine Model of a Splendid Prototype.

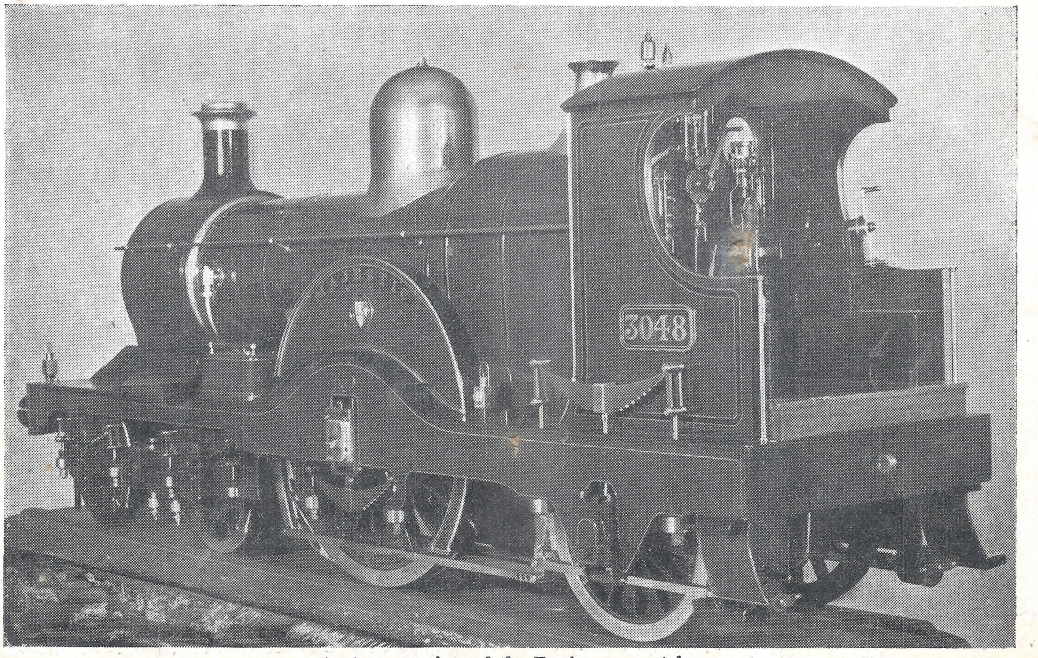
By HENRY GREENLY, A.I.Loco.E.

THE majority of the readers of the "M.E." will remember the famous "single wheelers" used after the abolition of the Great Western Railway "Broad Gauge" in 1892, but do not know that several—eight locos. actually—of the type were built to run on the 7 ft. gauge. The engines were designed by Mr. Wm. Dean in 1890, and had six wheels only, the driving wheels being 7′ 8″ diameter on treads. For the broad gauge, the wheels were placed outside the double frames, and during the summer of 1892 were converted to the standard gauge. The total number of the batch of six-wheeled engines was thirty, viz. :—Nos. 3001 to 3030. The "Wigmore Castle," No. 3021, was a favourite of mine because practically every evening I was able to drive it back from Paddington to Westbourne Park sheds. This privilege extended beyond the time of the accident in Box Tunnel in Sept., 1893, as a result of which the engine was altered to a bogie 4-2-2 type engine, and had the cylinders reduced from 20″ bore to 19″. The whole of the class was similarly rebuilt, and the design formed a basis for the new "Achilles" class No. 3031, of which the "Majestic," No. 3048, model illustrated is one. There were many minor differences in individual engines.

The model which I exhibited, by kind permission of the owner, at the MODEL ENGINEER Exhibition of 1934 has since been secured by the South Kensington Museum, and a second model, even more complete and accurate in detail, has been completed by our leading craftsman, Mr. A. P. Campbell. The model illustrated occupied 6,500 hours of work—a relatively short time compared with the "Majestic" model No. 2. The engine is arranged to work, the valve gear is complete and properly set, but the boiler, having the full number of tubes, cannot be steamed. The

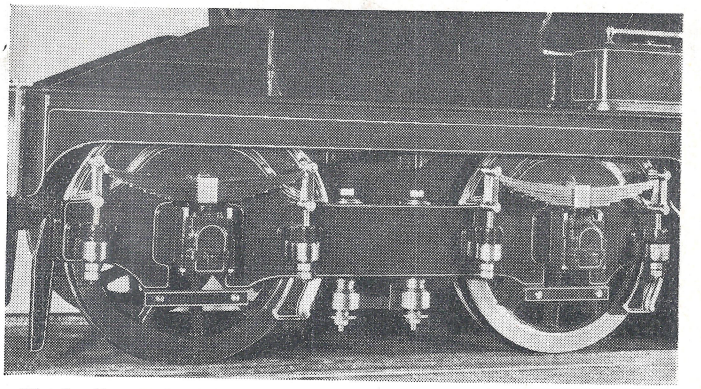


A 1 in. Scale Model of Mr. Wm. Dean's famous 7 ft. 8 in. Bogie Single Wheeled Express Locomotive, "Majestic No. 3048."

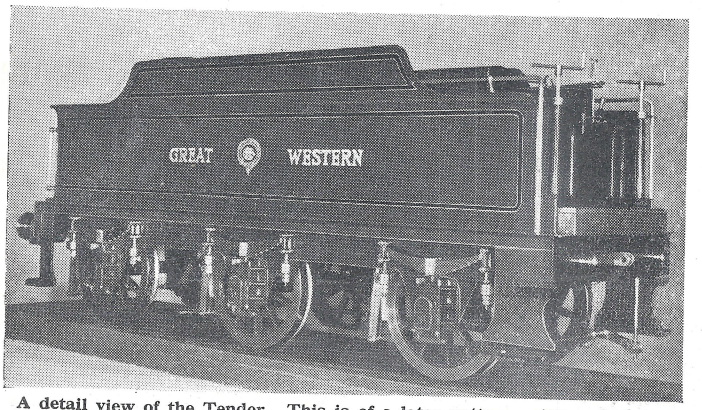


A close-up view of the Engine separately.

workmanship required, due to the ornate character of the prototype, has called for the highest skill. The curving and intersecting of the mouldings on the edges of splashers are unique in accuracy and finish. The nameplate is a work of art. The plate work has, I think, never been excelled in a scale model, except perhaps in the model which at the time of writing has just been completed and delivered. The maker, Mr. Campbell of Greenly Engineering Models, Ltd., was also responsible for the painting. This has been done in the proper coach-makers' style, the priming and body colours being applied and carefully rubbed down, finally finishing with the finest varnish.



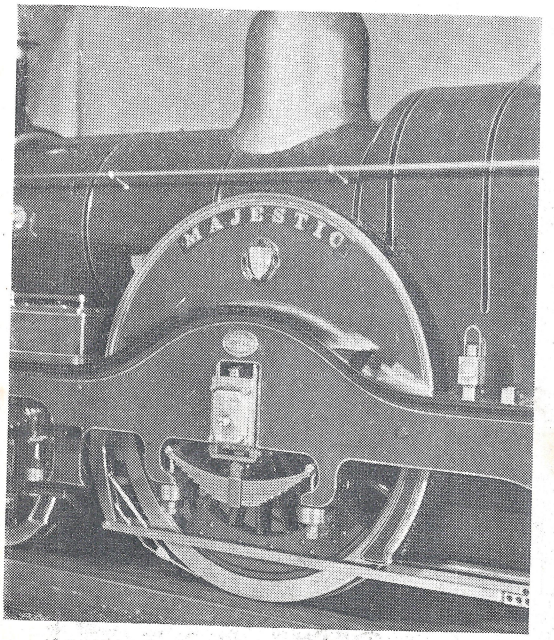
The leading Bogie of the Model G.W.R. "Majestic." A detail of the characteristic frame and splasher work, accurately portrayed.



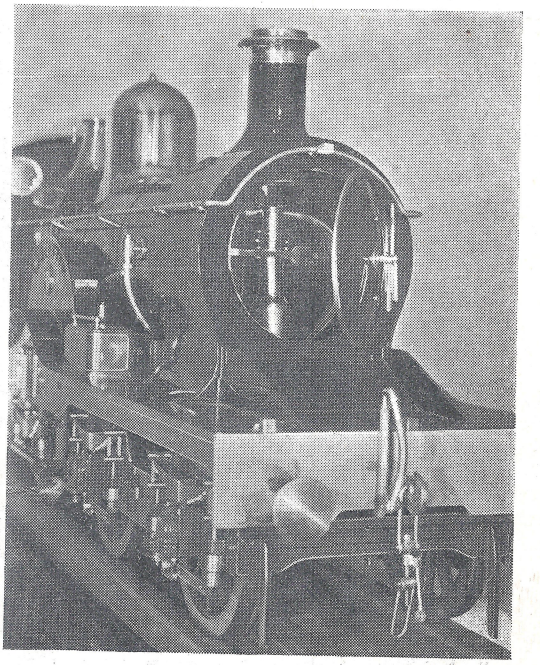
A detail view of the Tender. This is of a later pattern, with coal plates instead of rails, and painted with the single panelled sides.

The scale of the model is 1″, and the gauge 4 25/32″ between rails, the drawing office at the Swindon Works providing every facility in its production. The light steel work is protected by a coating of Singers sewing machine oil, which, after a test of several years, seems to protect the polished parts of a cased model very well indeed. A No. 1 Gauge steam model is now being designed and should be quite a success on a 150 scale ton train.

Mr. Maskelyne, who is a great admirer of this particular prototype, has written an interesting article in the "Model Railway News" of December, 1934, in which he describes some of the variances present in the eighty engines of the class. This article was accompanied by a scale drawing of "Lorna Doone," No. 3047.



A detail view showing the Single Driving Wheel and Ornate Splashers.



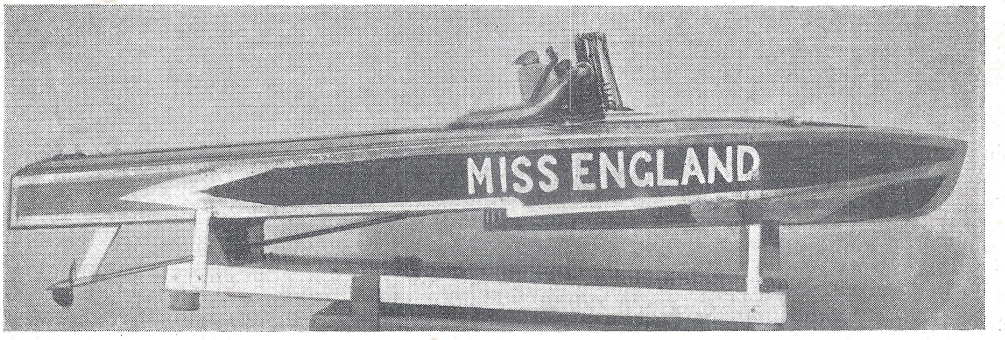
The front of the Loco, showing the open Smokebox Door.

MODEL MARINE NOTES

The "Model Engineer" Speed Boat Competition, 1935.

IT is fairly safe to count on one or two surprises when the results of each year's "M.E." Speed Boat Competition are disclosed, and the present competition is no exception to the rule, but unfortunately, the number of entrants is depressingly small, and by no means truly representative of the popularity, or tendencies in design and practice of model speed boats. We fear that the inferiority complex has been doing its insidious work again, all too many owners are hag-ridden by the obsession that their boats are "not good enough," and seem to have a terror of seeing their names last on the list for their class. In several cases which have come to our notice, prospective entrants who put off their attempts till the last possible moment were frustrated by the cold weather in December, which converted ponds into skating rinks, and we would therefore admonish all who take part in competition work to keep one or two competition entry forms handy, so that the necessary figures and signatures for any good run put up in competitions during the year may be duly recorded. Everyone, of course, hopes to supersede his own record before the year is ended, but this provision is useful in case hopes are not realised.

Many readers will be surprised to note the absence of several well-known boats from the list of entries, including Mr. Rankine's "Oigh Alba II," and Mr. A. W. Cockman's "Ifit IV." We are unable to account, or even conjecture the reasons, for their default, but hope that the owners will take the above advice to heart.

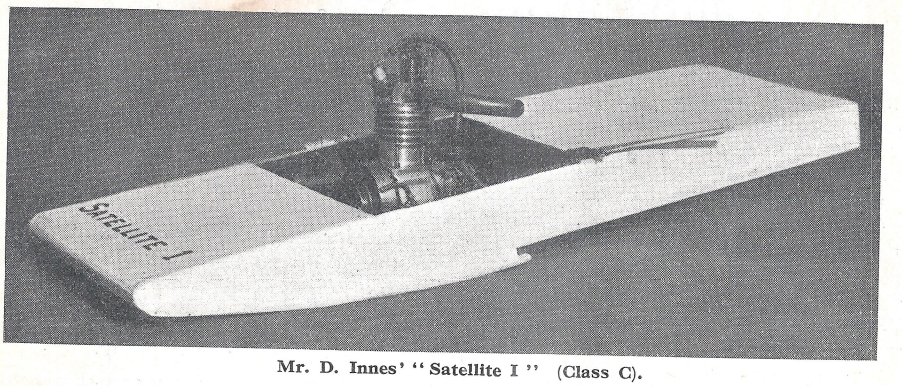


Mr. C. West's "Miss England" (Class B).

Mr. W. Tomkinson with "Rene II."

In the A and B classes, the increase in speeds over last year's performance has not been so great as was generally expected, but it is evident that the higher speeds become, the more difficult it is to further improve upon them. Our tentative forecast of last year that the record held so long by flash steam would fall during 1935 has not been realised, so far as officially recorded figures show, but there is still reason to think that it cannot stand very much longer.

Hope had been entertained that flash steam would again enter the lists during 1935, and this has not been entirely unfulfilled. Although only one boat of this type is entered, it is a very worthy effort, having attained the highest speed in its class, apparently qualifying for a world's record claim. The engine employed in this boat is, in common with all the I.C. engines fitted to the other boats entered, a single-cylinder one. Not a single two-stroke engine figures in the entries for 1935, as against four out of ten entries last year.



Mr. D. Innes' "Satellite I" (Class C).

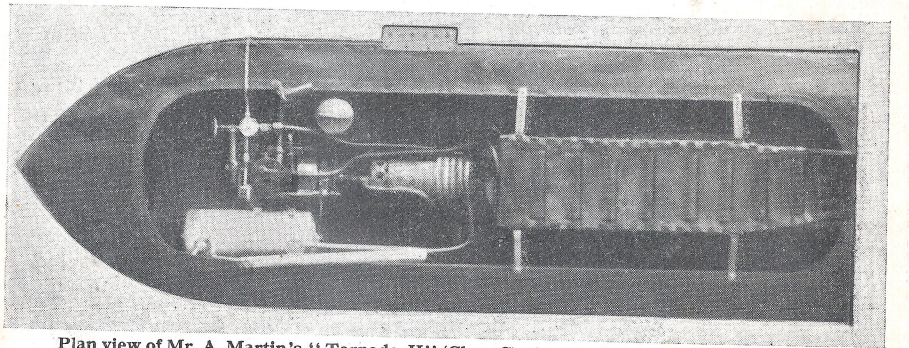
We very much regret that it was necessary to disqualify an entry of outstanding merit again this year, owing to a technical error in the observation of the run. In doing so, we wish to make it quite clear that there is no question of the authenticity of the speed claimed by the entrant, but exact adherence to the rules is necessary to avoid any possible controversy which might arise, and in this case, an error in the length of the line—which, it may be remembered, led to the disqualification of Messrs. S. L. and J. B. Innocent's "Betty," in the 1934 competition—is again responsible for the actual length (not the speed) of the timed run being less than specified.

The entrant to whom this misfortune has befallen is Mr. L. J. French, whose boat "Little Star" attained a speed of 24.74 m.p.h. in the C class —the highest speed of any I.C. engined boat of this class. We are informed that the boat was only completed towards the end of December, and that the recorded performance was put up on its first day out. It can therefore be regarded as a noteworthy achievement, which promises great things for future occasions. Mr. French will be awarded a complimentary diploma in recognition of his effort.

Here we digress to deliver another little homily on the importance of making sure that the full distance is covered in the recorded run. It is admittedly very difficult to ensure exact length of the tethering cord, but a safe method is to err on the right side, or time the boat over an extra lap. The exact *distance* travelled does not assume the same importance in ordinary club racing events, since each boat entered in the competition runs on the same line, and the important issue in this case is the comparative *times* taken by the competing boats.

Tendencies in Hull Design.

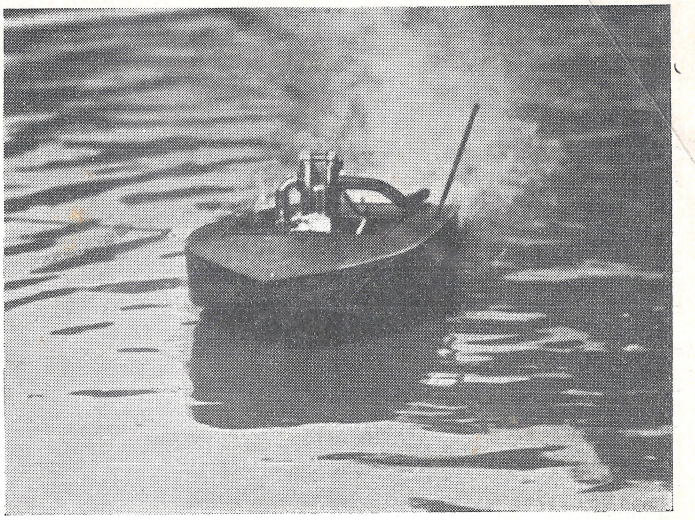
The "scow" or "rectangular plan" type of hull is again strongly represented, featuring in one boat in each of the A, B and C classes, while the flat bottomed, pointed bow type features in one A class and one C class boats. The hull of "Beryl II" in the C class, is an exact replica in outline, though not in the method of construction, of Captain Bowden's "Jildi Junior," entered in last year's competition. The most interesting hull design is that of Mr. French's C class boat, which has two steps, a feature which we believe to be unique in model speed boats, and certainly new to this competition. There is, in Class B, one example of a hull bearing a fairly close relation to a full sized prototype, after which it is named; this entry is also worthy of special mention by being the only all-metal hull in the competition. The material employed is "Alclad," an aluminium alloy having a coating of pure aluminium, which is extensively employed in seaplane and flying boat hull construction, on account of its excellent corrosion-resisting properties. The hull is quite a praiseworthy piece of work, and its weight appears to be fairly comparable with a wooden hull. Although the speed attained by this boat is not sensational, it is a type of boat deserving great encouragement, and we are glad to see it represented in this competition.



Plan view of Mr. A. Martin's "Tornado II" (Class C), the only representative of flash steam.

Planing angles on most of the hulls are fairly fine, and the approximately 'midships

position for the step appears to be still in favour, the one exception being Mr. French's hull, in which the two steps are spaced at about equal intervals in the length of the hull.

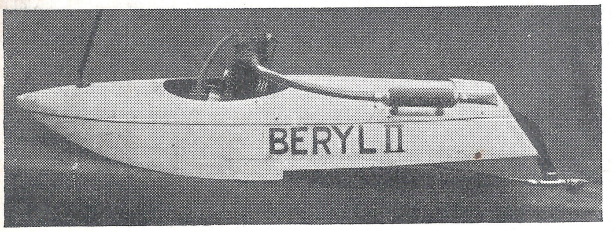


"Bulrush VII" under way.

Engine Design.

For originality and individuality of design, Mr. French's engine is easily the most outstanding example. The construction is distinctly unorthodox, and embodies a high camshaft, operating narrow angle inclined valves, a combination of air and oil cooling, and several other distinctive features. It is fitted with a submerged jet carburettor with compensating well, and runs on a 50—50 petrol-benzole mixture.

The engine fitted to Messrs. Innocent's "Betty" is fairly well known, and its design appears to remain unaltered, with the possible exception of one or two minor details. The same applies to Mr. Noble's engine in "Bulrush VII" and that of Mr. Tomkinson's "Rene II" which was described in the issue of the "M.E." dated April 25th, 1935, though the hull is not as in this description, being a later and improved one of generally similar type. Mr. C. West's "Miss England" has



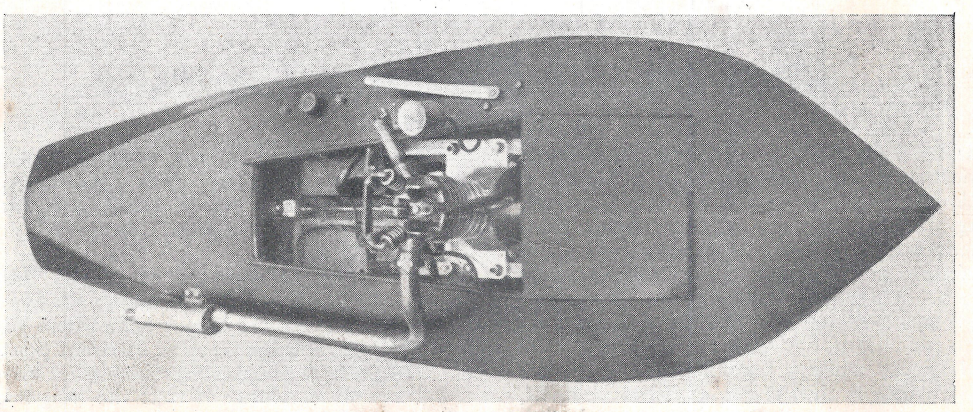
"Beryl II" (C class) by E. T. Westbury. The Hull is a replica of Captain Bowden's "Jildi Junior."

apparently a well-known commercial type of engine. The engine of Mr. E. T. Westbury's "Beryl II" is the original one described in the issues of the "M.E." dated January 24th, and 31st, and February 7th, 1935. It is stated to be unaltered and untuned in any way whatever, with the exception of having the "Atom Baby" carburettor shown in the original photographs replaced by an experimental suction carburettor. A similar engine, but modified in one or two details, is fitted to Mr. D. Innes' "Satellite I."

The one exponent of flash steam, Mr. A. Martin, employs a fairly orthodox layout of power plant, having a coil boiler with single blowlamp, and a single-acting uniflow engine with piston valve admission. The most noticeable feature about this plant is its low weight in respect of power produced, which is obviously very high, and its consistent running. The flash boiler has a single generating coil with a damping coil at uptake end, and the casing is $11\frac{1}{4}''$ long by $2\frac{3}{4}''$ square. The tube used in the boiler is $\frac{1}{4}'$ o.d. by $\frac{3}{16}''$ bore, and 12′ in length. A feed pump 5/32″ bore by $\frac{3}{8}''$ stroke is fitted, geared down 4.8 to 1 from the engine shaft.

Propellers and Transmission.

The articulated drive propeller shaft is not so popular as in last year's competition, three boats having direct driven propellers, including Mr. French's "Little Star," which also has the propeller forward of the skeg, which is most unusual nowadays. The agreement in propeller diameter, pitch, and blade area is closer than in previous competitions, and two-bladed propellers are universal.



Plan view of Mr. L. J. French's "Little Star" (Class C).

RESULTS OF THE "MODEL ENGINEER" SPEED BOAT COMPETITION, 1935.

Owner.	Name of Boat.	Total W'ght lbs.	Engine.				Hull.			Propeller			Speed M.P.H.
			No. of Cyl'ders	Type.	Bore.	Stroke.	No. of Steps.	L'gth ins.	Max. Beam ins.	Dia ins.	Pitch ins.	Blade Area sq. ins.	
CLASS A (BOATS OVER 12LBS.)													
S. L. & J. B. Innocent ..	"Betty" ..	14½	1	I.C. 4-stroke	32m.m.	37m.m.	1	36¼	11	3	6	1 7/16	41.18
G. D. Noble ..	"Bulrush VII."	13	1	I.C. 4-stroke	34m.m.	32m.m.	1	39.37	13	3½	8	1.686	36.52
CLASS B (BOATS FROM 7 TO 12 LBS.)													
W. Tomkinson ..	"Rene II." ..	11 7/8	1	I.C. 4-stroke	1 5/16"	1 5/16"	1	36	12	3⅛	7¾	1½	37.6
C. West	"Miss England"	11 7/8	1	I.C. 4-stroke	1 5/16"	1 5/16"	1	40	12½	3	8	—	21.8
CLASS C (BOATS UNDER 7 LBS.)													
A. Martin ..	"Tornado II." ..	4½	1	Steam I.C. Uniflow	21/32"	⅝"	1	27	8½	2½	5	1.24	26
D. Innes	"Satellite I." ..	6⅞	1	I.C. 4-stroke	1"	1⅛"	1	30	9	3	5	1	21.91
E. T. Westbury	"Beryl II." ..	6¼	1	I.C. 4-stroke	1	1⅛"	1	30	9	3¼	6	1¼	21.2

Personal Notes.

Most of the competitors are quite well known in the model power boat world, but there are one or two newcomers who deserve special mention. Mr. C. West is a member of the Portsmouth Model Steamboat Club, and previous to 1935 has done very little competition work. Mr. D. Innes, a member of the Altrincham Model Power Boat club, is also quite new to model power boat racing, in so far as our knowledge goes. Another competitor whose name has only become prominent during the last season is Mr. A. Martin, of the Southampton Model Power Boat Club, though we believe that his experience extends much further back than this, in connection with the above club's somewhat modestly isolated activities. Some notes on the model power boat racing careers of both Mr. G. D. Noble and Mr. W. Tomkinson have appeared in reviews of past competitions. Mr. L. J. French is a very old member of the South London Club, who has in past years been a fairly regular annual entrant in this competition, though his activities (but not his interest) have been suspended for some time previous to his eleventh-hour effort in 1935. The fame of Messrs. S. L. and J. B. Innocent in the model power boat racing world needs no further embellishment here; and Mr. E. T. Westbury is also very well known to all readers as a writer and experimenter on all types of small internal combustion engines.

The most striking characteristic of the 1935 competition is the growth in popularity of the C class boats. When this class was first introduced in 1933, there were many criticisms and doubts as to the success of such small boats and power plants, but now that it has been proved that they are capable of astonishing performance, this class shows every prospect of becoming most popular of all. Indeed, there is even some indication that a still smaller class might be worth while, now that thoroughly successful and efficient I.C. engines of under 10 c.c. have made their appearance, but some experience in designing and handling such tiny craft would have to be attained before the rules for this class could be formulated.

Any suggestions for the improvement of rules or classification, or of increasing the popularity of the "M.E." Speed Boat Competition in the future will be given the most careful consideration.

Notes on the Circular Course.

By J. C. HUDSON.

I THINK I am right in saying that the present method of persuading a boat to travel in a circle has been in use for at least 20 years. During this period, speed has more than doubled, and it is likely that what was quite satisfactory at 20 m.p.h. is no longer so at 40 m.p.h. The old method is taken for granted without much thought, so a little investigation will do no harm. A simple explanation of what happens when a boat is running on the circular course is that the boat if left to itself, will run more or less straight, but the tethering line pulls it off its course, with the result that it runs in a circle. This holds good for moderate speeds, but, I think, not for high speeds, when centrifugal force is a most important factor.

The point of attachment of the tethering line to the hull is, I do not doubt, always found by experiment. It comes somewhere forward of the c.g., and varies with different boats.

The state of affairs when the boat is travelling well up on its planes is that the weight of the boat, acting at the c.g. forces the stern out

against the lateral resistance of the propeller bracket, thus inducing the boat to travel in a circle. Lateral resistance of the hull only is negligible when planing, a fact which is easily demonstrated by "playing" a small hull of the scow type with a fishing rod when it becomes evident that she has practically no lateral resistance, skidding sideways on a turn and flinging her stern outwards if the line is attached at the bows. The addition of a propeller bracket quite alters her behaviour for the better, and prevents the stern from flying outwards. This lateral resistance of the propeller bracket must be responsible for a loss of speed. It is also a possible cause of capsizing, due to the fact that a temporary decrease in the immersion of the propeller bracket will allow the stern to swing out too far. On immersing to the full again this is corrected with more or less violence, sometimes resulting in a capsize.

If the above is correct, it would apparently be an advantage if the whole of the centrifugal load could be taken on the tethering line, instead of putting a part of it on the propeller bracket.

A simple way of accomplishing this is to employ two tethering lines, attached one forward and the other, at an equal distance, aft of the c.g. Lateral load on the propeller bracket can be eliminated by setting it at a slight angle with the centre line of the hull.

Partial immersion of the propeller bracket will then have no effect on steering or stability. I have used the two-line method very successfully in towing experiments with speeds up to 34 m.p.h. for a 15 inch hull of 8½ ozs. This is equivalent to 55 m.p.h. for a metre hull of 8½ lbs. approximately. It is important with this system, as with any other, that the height of tethering points on the hull be well chosen. Ill effects of a high C.G. and of engine torque can be counterbalanced by the pull of tethering lines, but that is probably well understood.

Supercharging 30 c.c. Petrol Engines.

EVIDENCE of the rapid progress in the design of model I.C. engines was demonstrated by the meeting organised by the Model Power Boat Association on Thursday, January 9th. The speakers were Mr. D. H. Chaddock and Mr. J. B. Innocent, who presented the case respectively for and against the practice of supercharging in small engines, each presenting substantial practical and theoretical data in support of their arguments. Mr. Chaddock had made a number of very careful tests on a commercially-made rotary blower of small dimensions, and obtained accurate records of output at various pressures volumetric and mechanical efficiencies, and had also tested a 30 c.c. engine on the brake under both aspirated and forced induction conditions, though in the latter case the blower was separately driven. He had also made a fairly complete survey of the use of blowers on motor car and other engines, and illustrated the salient features of several successful types. From his investigations and tests, he had come to the conclusion that there were very definite advantages to be gained by the use of blowers on small engines. Mr. Innocent gave some convincing data tending to show that equally good results in practice could be obtained from aspirated engines, and that, apart from complication and mechanical losses, the use of a blower introduced some very undesirable traits in engine performance, and also involved many mechanical and thermal troubles, besides inevitably lowering the actual thermal efficiency. Single cylinder engines were very difficult to supercharge efficiently, and some of the advantages found in supercharged engines were misleading, because in a good many cases, much of the improvement could be traced to the correction of faulty distribution, whereas it was usually inferred that the increased charge density produced the higher performance. Cooling of the piston, cylinder and valves was rendered far more difficult by the use of supercharging, and it was probable that the exhaust valve, in particular, would give considerable trouble if called upon to deal with a much greater quantity of gas at an increased temperature. Bearing loads would be vastly increased, and lubrication problems very much complicated. It was a fallacy to assume that higher torque in a speed boat engine would be desirable, since it would cause troublesome torque reaction, increasing the tendency to capsize. The development of the high-compression, high speed aspirated engine was to be considered as far more likely to yield practical results. The two lectures were followed by a discussion, in the course of which, one of the speakers observed that although his experience in experimental work on aircraft engines had brought him in contact with many of the troubles incurred by supercharging, they were mostly in connection with blowers and carburation, and the overheating difficulties suggested by Mr. Innocent were not so serious as had been indicated. Supercharging was a line of research which should certainly not be neglected, even if there were other ways of attaining the same result. Neither lecturer had said much concerning the supercharging of two-stroke engines although this was a very promising field for research.

The Model Power Boat Association.

Next meeting will be held on Thursday, January 30th, at the Coronet Hotel, Soho Street, London, W.1, at 8 p.m., and will consist of a discussion on "Model Speed Boat Hull Design and Testing," opened by a short talk by Mr. L. J. French. The subject is of vital importance to all model power boat enthusiasts, whose attendance and contributions to this discussion are cordially invited.

QUERIES and REPLIES

Querists must comply with the Conditions and Rules given with the Query Coupon in the Advertisement Page of each issue.

5,574.—Parts for Making Grandfather Clock.—A.L. (Leek).

Q.—Is it possible to get hold of clock parts in London to make a grandfather clock movement with or without chimes? I could get an old grandfather clock movement if it is possible to get wheels and pinions to fix a chime to.

A.—You can purchase grandfather clock parts from Messrs. E. Gray and Son, of 18-20, Clerkenwell Road, London, E.C.1. That is to say, parts partially finished, as go to construct an hour striking movement, such as the gathering pallet and cut rack of the striking work. Try that firm first, and what they cannot supply can be obtained from Smith and Sons, St. John's Square, Clerkenwell. You can obtain cut wheels from Messrs. Biddle and Mumford, 5, Percival Street, Clerkenwell. You cannot obtain suitable cut pinions, but can make your own from pinion wire obtained from either or both firms given, or from Mr. Geo. Adams, of 290, High Holborn, W.C.1.

It is doubtful whether you can obtain parts for chiming work from anywhere, but you can try the firms named.

There is no book which gives definite practical descriptions of clock making, but a great deal can be learnt from a small handbook, "The Clock Jobbers' Handybook," by Hasluck (from this office, post free 2s. 9d.). Read also a series of articles on Clockmaking, in Vols. LX and LXI of the MODEL ENGINEER.

6,868.—Reducing Speed of Dynamo.—C.M. (Boscombe).

Q.—I have fitted up a 1 h.p. petrol engine which is driving a 12 volt 10 ampere car dynamo for shop lighting. I find to get the necessary speed, however, I have to gear up by countershafting, which is running too fast for my liking. How can I reduce the speed of the dynamo? Will new field coils do this without changing the armature?

A.—You do not state what the present dynamo speed is, nor what you require to reduce it to, but as a rule, car lighting dynamos will give full output from 1,400 r.p.m., or so upwards, and this should not require an excessive amount of gearing up from the engine. Such a small engine as 1 h.p., for instance, ought to be able to run at this speed direct-coupled to the dynamo without any countershafting, if it is of modern design. Before any definite advice can be given, it would be necessary to have more precise particulars concerning the dynamo, such as diameter and length of armature, number of armature slots, number of commutator bars, whether the field magnet has two or four poles, and how many sets of brushes there are. If the windings are not defective, it is unlikely that you will be able to reduce its speed by changing the field coils alone; it is the number of conductors on the armature which determines the speed. Another important point is, that with all car lighting dynamos of the "constant-voltage" type, it is essential that they should be run in conjunction with the usual car battery in parallel. All the self-regulating features disappear when the battery is absent, and you stand a good chance of burning out your lamps whenever the speed varies or one or two lamps happen to be switched off.

6,875.—Running Models by Compressed Air.—A.J.B. (Torpoint).

Q.—I wish to run various models and small engines, etc., by compressed air. These would include a Stuart Turner ½ h.p. petrol engine (with 14 in. flywheel). It would only need driving slowly—with the plug out to ease compression—but would have to be rotated by belt to the flywheel from a motor driven by compressed air.

(I) What sort of motor can one get or make, preferably the pulley of which is driven by compressed air, and the speed of which can be controlled within certain limits?

(II) What is the ratio between pounds per inch of compressed air and h.p.?

(III) What sized tank of compressed air will give, say, ¼ h.p. for one hour?

(IV) Would above features require as much as 100 pounds per inch or more, to work properly.

(V) What is *about* the price of a tank to hold compressed air suitable for the above purpose?

A.—(I) You can drive your model by a small steam engine to which pressure is applied by compressed air. Its speed can then be varied by the engine throttle in the usual way.

(II) There is no appreciable ratio between pounds per square inch and horsepower. The same formula holds good for air as for steam, the indicated horsepower being the mean cylinder pressure times the length of stroke in inches, times the area of the piston in square inches, times the number of revolutions per minute in a single acting engine, or twice the number of revolutions per minute in a double acting engine. This product divided by 33,000 gives the I.H.P., which taken in relation to the efficiency of the engine, gives the B.H.P. It depends, therefore, upon the size and speed of an engine taken in relation to the available pressure in the cylinders.

(III) We do not think that compressed air in gas holders can be obtained. The correct thing to do is to employ a driven compresser which, pumping into a container, will maintain constant pressure to drive your engine at constant speed. If you do this, however, you may as well employ the motor or engine driving the compressor to do the driving of

your I.C. engine and models directly, and cut out the air compressor. If, however, you can procure compressed air, as you use the air, its density will decrease and the air pressure will go down, slowing the motor, and to maintain a constant speed, you will need, within limits, a very sensitive governor, or stand by the engine regulator, and at intervals, open it wider.

(IV) You would scarcely need 100 lb. per sq. inch to do what you need. Here again, much depends upon the size of the cylinder of the engine, but we should say that 20 or 25 lb. per sq. inch above atmospheric pressure will do all you want.

(V) There is considerably more in this whole question than can be intelligently communicated by any kind of reply, and involves questions of personal consultations with a specialist in pneumatic engineering, which are likely to cost you a good deal of money. The point is, why not drive your outfit by means of an electric motor, belt geared down to the slow speed you need, and having means of changing the motor speed over a small range by means of changing the belt ratio gear over a larger opposed cone pulley. Even this is a matter for expert consideration, taking into account local voltage, type of motor, speeds needed, how many models are to be run at once, etc. From a broad outlook it appears that quite a lot of such models could be run slowly by a ½ h.p. motor, or even by a ¼ h.p., but this is based on mere assumption.

5,456.—Running Electric Clocks from Mains.—S.T.S. (Thornton Heath).

Q.—I have two electric clocks, a "Tayco" (Senior), and a "Synchronome," with two dials. Unfortunately both lots of batteries have run out together, and as the expenditure will be in the neighbourhood of 10s. for replacement, I am wondering whether you could advise me of a method of driving them from the mains—200 volts, 50 cycles single-phase A.C. It occurs to me that this might be possible at very little extra cost.

A.—This is a moot point. It may be that a step-down transformer rectifier rated at the output point to the voltage you require will or will not function as your smooth current battery. We are not sure that the interrupted nature of the output current will not be considerably cut down by the impedance of the magnet coils of the clock, so that on contact, instead of getting a one stroke magnetic pull, the tendency will be to get a too short vibratory movement of the armature, which will affect nothing on the recording apparatus. We think you should enquire of the rectifying apparatus makers, Messrs. The Westinghouse Brake Co., Ltd., 82, York Road, Kings Cross, N.1. Tell them the working voltage required for the clock and the current taken by the magnet with a good impulse to the clock, and perhaps they may tell you whether the interrupted current can be smoothed by choke so not to be affected by impedance in the coil.

In any case, such an apparatus will probably cost ten times the outlay on new batteries, but this they will perhaps confirm.

6,869.—G.W.R. ¾" Scale "King" Class Loco.—J.B.P. (Llanelly).

Q.—I am contemplating building a ¾ inch scale G.W.R. locomotive, "King George V," and I would like your advice on the following points:—

(*a*) Where can I obtain drawings for the 3½" gauge model.
(*b*) Is this a 2 or 4-cylinder engine?
(*c*) Is it possible to obtain a large coloured photograph?

A.—Drawings are obtainable. A set of drawings made with the help of the drawing office authorities at Swindon to a scale of 1½" to the foot is obtainable from Greenly's Engineering Models, Ltd. The model locomotive is a 4-cylinder machine (as the prototype), and several of the twenty-five sheets are to ¾" scale, half size for the 1½" scale. Photographs of an engine made to these drawings were published in the "M.E." for Nov. 21, 1935.

5,376.—Lighting Stage with Batteries.—D.J.S. (Uttoxeter).

Q.—I shall be very grateful for your advice regarding electric lighting for a stage. As there is no available electric supply, I intend to use 12 volt car batteries and six 12 volt 4 amp. bulbs. I desire to gradually dim the light out. Will you advise me whether I shall be able to get a resistance and what firm would supply, and if I made one, what kind and length of wire I should require?

A.—The usual form of resistance to use in this case is the water resistance. Use a wooden water vessel, or one of earthenware or some insulator—not metal, as, if the plates came in contact with the latter, it would short out the contrivance. Have the vessel full of water containing a little salt in solution, or some alkali such as caustic soda or caustic potash. Have immersed in the solution, not touching each other, two largish sheets of iron plate to which are attached the lead in to one and lead out to the other. If the plates are hung from wooden rollers by means of cords, wires or strings and one or both of the rollers be revolved, one or both of the plates can be lifted out of the solution gradually, thus offering a reduced area of plate actually in the cell and so introducing a resistance. Variable resistance effects can be obtained by gradually pushing the plates apart as well.

We are not able to give you exact information as to correct proportions and quantities to give a dimming effect for your particular installation, but would advise you to make some experiments, first on a small scale. If your total current is large, the water may soon get hot and probably vary the resistance, and then you can try with a larger body of water. If, in the first place, the resistance is too high, you can then make the solution stronger or put in larger plates. If you wish to cut out the resistance entirely, provision can be made for the plates to touch. There is plenty of scope for experiment in this direction, and perhaps some of our readers who have made similar apparatus may give you some tips.

PRACTICAL LETTERS from OUR READERS

Taper Boilers for Locomotives.

DEAR SIR,—In the MODEL ENGINEER, Mr. Lake asks for further views, and claims, on the subject of taper boilers. I would like to approach the subject as one who has served practically all his apprenticeship in the boiler mounting shop in Crewe Works, and I claim that the taper boiler scores in all directions.

Firstly, the cost. The slight extra cost of rolling plates for a taper boiler, though I always thought the same plant did for both, is more than offset by the ease of building and repair. Take, for instance, a "Royal Scot" boiler. There is a vast difference between the intricate interlacing of internal pipes and stays, namely, two shoulder stays, six short stays, two intermediate stays, six long stays, and four front stays with two main delivery pipes, two injector pipes, long and short blower pipes, large and small, and auxiliary ejector pipes, and the ten stays—(these comprising shoulder, intermediate and long) with the long blower pipe of the taper boiler. Another point is that the taper boiler has no studs in it excepting eight for the header casting, whereas a "Scheme 3" or "Rebuilt Claughton" has sixty-two on one side, and sixty-four on the other. Also, most of the fittings are carried on a steam manifold on the backplate of the new Stanier boiler instead of being distributed on a number of pads.

With the taper boiler, as Mr. Lake says, water circulation is easier, but the main thing is, in my opinion, that there can be no forward surge with the danger of exposing the firebox roof. I also think that the front portion is just as effective, if not more so, than the front portion of a "straight" boiler barrel. The tubes are giving the same heat to, in the case of the conical barrel, less water, but a top feed makes a difference too. The trays under the top feed in "our" new boilers distribute the water equally over the top of the large tubes where it receives most heat instead of two spouts halfway along the side of the barrel. That the Stanier boilers steam better is the firm conviction of my brother-in-law, an L.M.S. engine driver of some years' standing.

I do not think there is much difference in the weights of boilers, tapered or straight, and I cannot answer for the driver's outlook, but in cost, ease of building, ease of renewal, and, in general, best all round, the taper boiler (Mr. Stanier's taper boiler) wins hands down.

Yours faithfully,

Crewe. WM. BURKS.

DEAR SIR,—The views and arguments raised by Mr. C. S. Lake, about conical loco. boilers, are interesting, but do not touch upon the real motive for their adoption. He mentions water space in the vicinity of the firebox. Upon reflection, one can see that this is not the important point, since a parallel boiler built up to gauge dimensions would similarly provide maximum water space. The quest for greater water space around the fire can only be met, without sacrificing fire grate area, by building the firebox out over the frames, as did the late Mr. Ivatt 30 years ago, whose methods were conspicuously successful, which methods have since been carried forward by Mr. Gresley, and adopted by Mr. Stanier in his "Princess Royal" class. The questions of combustion chamber and of weight do not seem to be relative at all, whilst from the point of driver's outlook, a taper boiler is no help at all, since the wedging action of the boiler will produce a sliding current of air from smoke box to cab, to keep the smoke out of which, the height of the chimney is maintained.

The real point is apparent when we consider what happens on the road. Six-coupling and eight-coupling of driving wheels, necessitated longer boilers. The increasing length of these magnified the results of gradient on the road. The climb up to Shap would produce in any boiler, apparent rise of water in the gauge glass, which would be all very well whilst climbing, but what happens to a fast moving engine when the top is reached and there comes that fast rush down the other side. The water in the gauge glass disappears or nearly so, and unless the fireman has had his injectors pouring in water as fast as possible, that loco. is due for boiler repairs immediately. The parallel long boiler is obviously at a disadvantage here, because, during descent the water has somewhere to go and promptly goes there, leaving firebox crown sparsely covered. On gradients of 1 in 50 and less, which are common in the northern counties, this ebb and flow of water in the boiler is a problem, which is being met by short boilered tank engines, and in six-coupled engines, by the taper boiler. If the water has nowhere to run, away from the firebox, it simply has to stay there, and the nett result is gain, because ebb and flow is arrested, and further, that frenzied injection of water at the expense of valuable steam at a critical time is partly avoided. With slow moving goods locos. the problem is not acute, but with fast moving engines it has demanded solution, and so we find L.N.E.R. "Pacifics," and the new batches of L.M.S. engines all with the taper boiler.

As regards cost, this may be higher initially, but must be less than repeated boiler repairs, which after all is the thing that matters.

Allow me to express my appreciation to Mr. Lake for his interesting and edifying contributions, and accept yourself my best wishes for the continued success of the journal.

Yours faithfully,

Bradford. J. HAINSWORTH.

The Future of Model Petrol Planes.

DEAR SIR,—In reply to the several notes published in the "M.E." from time to time, and to Captain Bowden's letter concerning duration flights with petrol driven model planes, I submit the following observations, which are entirely my own, but are, in the main shared by my fellow members. I think all aero modellists will agree upon one point, i.e., that they would not like to see petrol models forbidden by law. Such legislation could very soon be brought about either by local bye-laws or common law, and if a committee or other official body were given the task of pronouncing on the petrol model, they would very soon describe it as a dangerous mechanically-propelled vehicle, entirely out of control in two dimensions (apart from risk of air collision), that is, in a horizontal and vertical plane.

The possibility of various kinds of accidents is so great that it is most remarkable that there has not been one during the three or four seasons in which petrol models have been flown, but the number of modellists producing these is bound to increase, also the frequency of individual flights. Bearing these points in mind, to me it seems absolutely necessary for the various clubs and the governing body together, to take immediate and drastic steps to prevent long uncontrolled flights, and the following suggested alterations seem to be indicated :—

(1) The complete abolition of the present duration record and no further ones to be attempted.

(2) No one to be permitted to fly uncontrolled petrol models on any ground, for more than two minutes' flight.

(3) Any individual breaking Rule 2 should be both expelled from his club and barred from appearing with a model at any club or public meeting, for at least one whole season.

(4) In place of duration records, some efficiency formula should be devised for obtaining records, which might include weight lifting over a given distance, with a small petrol allowance, or similar idea.

(5) Most prize money should be offered for ideas for obtaining good control of petrol models when in flight.

(6) Finally, at present no encouragement whatever be made to induce anyone to fly across country.

Many will think these ideas most drastic, but it is far better to make our own laws than to have them made for us by people who are not the least interested in our models. I would further point out that while a duration record stands, there will always be someone who will wish to beat it, the record figure simply acting as a bait. I think myself that flying for duration with a good petrol model is just comic opera, and given another few ounces of petrol, which a good machine will easily carry, I see no reason why it would not continue to fly all afternoon. There is, therefore, no reason to carry on chasing time and vision ability in this manner. Efforts might be made to reduce the size of engines and models, though it is difficult to imagine any petrol model so light as to be dangerous in uncontrolled flight.

Finally, I would like to point out that if ever these models are prohibited, all the development work on small i.c. engines which has been done by individuals such as Mr. Westbury and numerous firms, and money which has been spent, will be wasted. I might add that I have no connection with the trade in any way whatever. I have nothing to lose or gain either way, but being an old timer of pre-war vintage, I know the struggle there has been to obtain long flights. Are we to lose them at our initial success? Yours faithfully,

F. A. LOWE.

Hon. Sec., Nottingham Model Aircraft Construction Society.

Institutions and Societies.

The Society of Model and Experimental Engineers.

Meetings. At Caxton Hall, Westminster, at 7.0 p.m.

To-night. Competition, Track and Model Night.

Friday, February 14th. Ladies' Night. Lecture by Mr. G. R. Stevenson, F.R.G.S., on "Work and Play on a Sarawak Oilfield," illustrated by cinema films.

President's Prizes. For full particulars please see last week's issue.

Workshop. Monday, February 3rd. Rummage Sale. Monday, February 24th, Demonstration. Subject to be announced.

Full particulars of the Society may be obtained from the Secretary, R. W. WRIGHT. 202, Lavender Hill, Enfield, Middlesex.

The Finchley Model Engineers' Society.

The future activities of the above society are as follows: January 29th, Rummage Sale. February 5th, Track Night. February 12th, Construction Night. February 19th, Films of model engineering interest kindly loaned by the Nottingham Society of Model and Experimental Engineers. February 26th, Whist Drive. All the above will take place at the Avenue House, East End Road, Church End, Finchley, N.3.

Further particulars from the Hon. Secretary, S. C. PRITCHARD, "Bishopswood," The Bishop's Avenue, East Finchley, N.2.

Croydon Society of Model Engineers.

Our next meeting is a "Discussion Night" to be held on January 27th, at 8 p.m., at Clyde Hall, Clyde Road, Addiscombe.

On February 10th, a Rummage Sale will be held.

Hon. Sec. and Treasurer, H. W. CLEMENTS, "Olivedene," Coulsdon Road, Old Coulsdon, Surrey.

Harrow and District Model Engineers' Society.

Our first meeting was a great success, a dozen prospective members turned up, and some good examples of work were shown. The meeting was an informal one, the election of officers, etc., being deferred until next time in the hopes that a few more will turn

up, and by that time to have obtained the use of a club room.

The next meeting will be held on Friday, January 24th, at the address below.

H. E. BINGLEY, 92, Morley Crescent East, Stanmore, Middlesex.

Altrincham Model Power Boat Club.

The annual general meeting of the above club will be held in Altrincham Public Hall, on Monday, January 27th, at 8 p.m. All members are requested to turn up, as business will also include the report on the recent exhibition.

Hon. Secretary, F. W. WATERTON, "Lynwood," 3, Grosvenor Square, Ashton-on-Mersey.

The Manchester Society of Model and Experimental Engineers.

The next meeting of the above Society will be on Friday, January 24th, 1936, at 8 o'clock, at the Manchester School of Technology, Sackville Street, Manchester, when Mr. A. Maytum will give a talk on "Workshop Wrinkles."

Hon. Secretary and Treasurer, W. E. WOOD, 20, Albert Place, Longsight, Manchester, 13.

Leicester Society of Model Engineers.

The next meeting of the above Society will be held on Friday, January 24th, at 8.0 p.m., at St. Mary's Schools, Castle Street.

It is proposed to visit a Coventry motor works on a date to be fixed during February. Will all who would like to go, please hand in their names at this meeting?

Hon. Secretary, J. WALKER, 78, Waltham Avenue, Braunstone Estate, Leicester.

Nottingham Society of Model and Experimental Engineers.

The first meeting of the year was held at Friar Lane, on Wednesday, January 1st. About 56 members, wives, and friends attended and passed a most enjoyable evening. Two films were shown, Mr. Meredith's film of his "O" Gauge "Craigard" railway, and "The Iron Mule" showing the adventures of a quaint 0-2-2 loco. and its train.

The "Craigard" film is a masterpiece as is the railway itself, and the shots include a trip round the track on the footplate of one of the loco's., which is unique, the making up of a goods train, a parade of historic loco's. from the "Rocket" to the L.M.S. Turbomotive and a finely detailed model of the L.N.E.R. "Pacific" 4472.

"The Iron Mule" is full of humour and was greatly enjoyed from start to finish; it is a film to be recommended to all societies as a fitting conclusion to a good show. The thanks of the society are due to Mr. C. W. Meredith for the loan of his film and the suggestion to hire "The Iron Mule."

At the meeting on January 29th, our Chairman, Mr. T. W. Lawson, will give a talk on the manufacture of beet sugar. The annual meeting will be held on February 12th.

The arrangements for our next exhibition are now in hand and entry forms for the Open Challenge Competition will be ready shortly.

Hon. Secretary, J. E. BRAILSFORD, 4, Whitehead Street, Robin Hood Chase, Nottingham.

The Hastings and St. Leonards Model Yacht Club.

The annual meeting of this organisation was held at the Bathing Pool, St. Leonards, on Wednesday, January 8th.

The officers were elected as follows: Rear-Admiral H. E. Dannreuther, R.N., president; Commander Bray, R.N.R., and Major W. H. Dyer, R.A., vice-presidents; Messrs. W. J. Balcombe, secretary and treasurer; W. R. Bayliss, assistant secretary and official treasurer; Stanley G. Adie, commodore.

The Secretary noted the substantial increase in membership, and told the meeting that interest was being taken in the Club's activities in the neighbouring town of Bexhill, and he welcomed new members from that town who were present.

A power boat section was also decided upon and will prove a feature of the club's future activities.

W. J. BALCOMBE, 57, St. Mary's Road, Hastings.

The Junior Institution of Engineers.

Friday, January 24th, 1936. At 39, Victoria Street, S.W.1, at 7.30 p.m. Informal meeting. Lecture. "Gears and their Uses," by Dr. H. E. Merritt.

Notices.

The Editor invites correspondence and original contributions on all small power engineering and electrical subjects. Matter intended for publication should be clearly written on one side of the paper only, and should invariably bear the sender's name and address. Unless remuneration is specially asked for, it will be assumed that the contribution is offered in the general interest. All MSS. should be accompanied by a stamped envelope addressed for return in the event of rejection. Readers desiring to see the Editor personally can only do so by making an appointment in advance.

All subscriptions and correspondence relating to sales of the paper and books to be addressed to Percival Marshall and Co., Ltd., 13-16, Fisher Street, London, W.C.1. Annual Subscription, £1 1s. 8d., post free, to all parts of the world. Half-yearly bound volumes, 11s. 9d., post free.

All correspondence relating to Advertisements and deposits to be addressed to THE ADVERTISEMENT MANAGER, "The Model Engineer," 13-16, Fisher Street, W.C.1.

Contents.

The asterisk (*) denotes that the subject is illustrated.

SALES AND WANTS

EVERYBODY'S MARKET

ENGINEERING & SCIENTIFIC ELECTRICAL GOODS

Advertisements are inserted in these columns at the rate of **One Penny** *per word; minimum charge for advertisement,* **One Shilling.** *Single letters or figures are charged as words, and a compound word as two words. The advertiser's name and address are charged for.*

Advertisers who wish to separate *their announcements into distinct paragraphs must have not less than 20 words in any one paragraph followed by the word "Below"—which is charged for.*

"Box" replies, *care of these offices, are charged 6d. extra to cover postages. The following words must appear at end of advertisement: "Box——, 'Model Engineer' Offices," for which usual rate will be charged. (Advertisers need not include our full address.)* **When replying to a "Box No." advt.** *address your envelope: Advertiser, Box——, "The Model Engineer," 13-16, Fisher Street, London, W.C.1.*

All advertisements in these columns must be prepaid, *and remittances should be made by Postal Orders or Stamps, and sent to the Advertisement Manager, "The Model Engineer," 13-16, Fisher Street, London, W.C.1.*

Please state under which Classified Heading you wish your advertisement to appear; the classifications are as follows:—

General, Models, Wireless, Motoring Tools, Engines, Electrical, Business, Wanted.

Advertisers are requested to send in their announcements as early in the week as possible, as although we accept advertisements up till the first post on Friday preceding the date of issue, **we cannot guarantee the insertion of those arriving on this day.** *Telephone: Holb.: 3818-3819.*

OUR DEPOSIT SYSTEM.

We will receive from intending purchasers the purchase money of any article advertised or sold by our advertisers, and will acknowledge its receipt to both the Depositor and the Vendor, whose full names and addresses must be given. Unless otherwise arranged beforehand between the parties, it is understood that all goods are sent on approval, and that each person pays carriage one way if the goods are returned. The deposit is retained by us until we are advised of the completion of the purchase, or of the articles having been returned and accepted. In addition to the amount of the deposit, a fee of 1/- for the sum of £1 and under, and 1/6 for amounts in excess of £1, to cover postage, etc., must be remitted at the same time, and sent to the Advertisement Manager, "The Model Engineer," 13-16, Fisher Street, London, W.C.1. In cases of persons not resident within the United Kingdom, double fees are charged.

The amount of the deposit must be sent either by Postal Order or Registered Letter. **(Cheques cannot be accepted.)**

The fee mentioned above should be sent in stamps or by Postal Order as a separate amount.

In cases of exchange, money to the value of the article should be deposited by each party. **We cannot receive the articles themselves.**

General

Watch Repairers. Send 3d. for list of Tools, Materials, Watches, Clocks, Gramophone Parts. Guaranteed watch repairs. Complete clock movements stocked. Parcels fully insured.—BLAKISTON, Ainsdale, Lancs.

Cheap Printing. 1,000 Billheads, 3s. 6d. Samples free.—CRETEWAY PRESS (22), Buxted, Sussex.

Small Turned Screws, Nuts and Washers. Assorted gross B.A., brass 2s., steel 2s. 6d. Whitworth, brass, 3s., steel, 2s. 6d. List and samples, 2d. Trade supplied.—J. H. BENNETT, Station Road, Willesden Junction, N.W.10.

Reduced Prices: Eureka Improved Air Compressors. Castings and Drawings from 9s. per set. Photo 3d.—POYSER, Peck's Hill, Mansfield.

Screws Nuts, Washers (Special Model Engineers' Sizes). Everything for Electrical Rewinds and Repair. Lists free.—LUMEN ELECTRIC COMPANY, Scarisbrick Avenue, Litherland, Liverpool, 21.

Air Compressors, New patent, 25s.; Super Spray Guns, 17s. 6d. Complete plants.—JOHN M. E. STEEL, Bingley.

"Ajax" Safes Might Save Ruin from fire or theft any time. List, application.—GREENWOOD, Arnside Road, Southport.

Ball Bearing Plummer Blocks, 1", 5s.; ¾", 4s. 3d.; Gun Metal less 50 per cent., Shafting, Hangers, Pulleys, Cones, complete Countershafts from 10s.—Below.

Ball Journals, ¼", 9d.; ⅜", 1s.; ½", 1s. 2d.; ⅝", 1s. 4d.—HALL, 30, Collindale Avenue, Erith.

Engine Black (heatproof); Brilliant Copal Varnish; sample tins 9d., post free.—WM. QUICK, Gurnard, Cowes.

"Home Toymaking," with 180 illustrations of practical amusing toys, 1s. 2d.—Below.

Castings Moulds for lead toys. Sample mould, 2s. 9d. Catalogue free.—INDUSTRIES, 13, Gordon Avenue, Twickenham.

"Maxspray," new rapid electric paint spray plants, universal current. £7 complete. Agents wanted.—JOHN M. E. STEEL, Bingley.

"M.E." Vols. I, II and III, in original bindings. Perfectly new, as received from binders; also Vol. I in reading case with strings, in 12 separate issues. What offers? —DANSON, 54, Gassiott Road, Tooting, London, S.W.17.

Exchange Concise Encyclopedia, 52 Parts, Steam Engine, no junk, must be good.—Cox, 113, Finchley Road, Kingstanding, Birmingham.

Set of House or Office Telephones.—Box 941, MODEL ENGINEER Offices.

"M.E." Vols. 4 to 7, bound together, Blick Typewriter, 12s.; Office Telephones, 10s.—25, Crieff Road, S.W.18.

"M.E." Hexagon Head Screws, Nuts. Try sample shilling's worth.—30 Highfield Road, Doncaster.

For Sale, "Model Engineer" Volumes (1935), new, 8s. 6d. post free.—REAL PHOTOGRAPHS Co., 9 Union Court, Liverpool, 2.

106 Copies "Model Engineer" Between 1920 and 1935, 5s. Also the two bound volumes "Wonderful Models," 10s. All perfect.—DRAPER, Westfield Street, Ossett, Yorks.

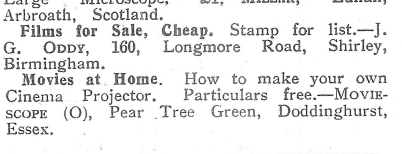
Home Cinematography

Electric Home Cinemas, standard films, cheap. Lists.—WAYLAND, 109, Kenlor, Tooting, London.

Fine Projector with Arc Lamp and electric motor drive, on adjustable stand, quantity of films in iron boxes, £5 or near. Or would exchange for 4" to 5" Plain Lathe. Also Large Microscope, £1.—MILLAR, Lunan, Arbroath, Scotland.

Films for Sale, Cheap. Stamp for list.—J. G. ODDY, 160, Longmore Road, Shirley, Birmingham.

Movies at Home. How to make your own Cinema Projector. Particulars free.—MOVIESCOPE (O), Pear Tree Green, Doddinghurst, Essex.



"Pioneer" Castings and Parts, machined or rough. Stamped envelope for list.—FENN, 2a, Charles Place, Drummond Street, London, N.W.1.

Birmingham Model Railway Supplies. Agents for Leeds Model Co., Full range "OO" Rolling Stock. Demonstrations.—18a, Dale End.

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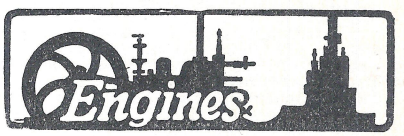

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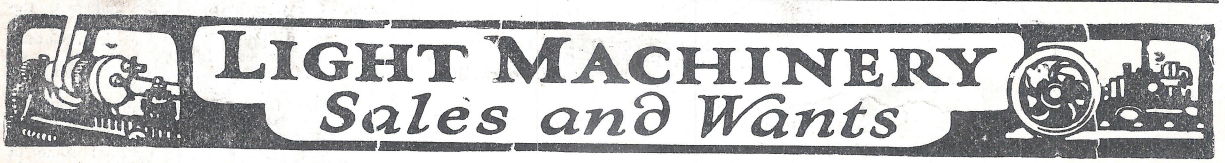

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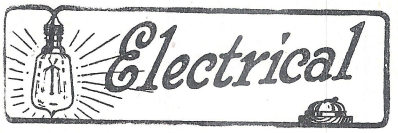

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January 23rd—Society of Model and Experimental Engineers. Competition, Track and Model Night.

January 24th—Junior Institution of Engineers. Informal Meeting. Lecture, "Gears and Their Uses," by Dr. H. E. Merritt. 7.30 p.m.

January 29th—Finchley Model Engineers' Society. Rummage Sale.

January 29th—Park Model Aircraft League. Second Annual Dance and Exhibition of Models at Farnan Hall, Streatham, 7 p.m. to 12.

January 31st—Junior Institution of Engineers. Informal Meeting. Lecture, "Machinery and Engineering in Ancient Times," by Mr. R. P. Howgrave-Graham. 7.30 p.m.

January 31st—Kent Model Engineering Society. Demonstration by Mr. W. J. Hillier on "Hardening and Tempering Small Tools," Sportsbank Hall, 8 p.m.

February 3rd—Society of Model and Experimental Engineers. Rummage Sale.

February 5th—Finchley Model Engineers' Society. Track Night.

February 11th—Kent Model Engineering Society. Talk by Mr. H. L. Smith on "Model Locomotive Constructional Hints." Sportsbank Hall, 8 p.m.

February 12th—Finchley Model Engineers' Society. Construction Night.

February 14th—Society of Model and Experimental Engineers. Ladies' Night. Lecture by Mr. G. R. Stevenson on "Work and Play on a Sarawak Oilfield."

February 19th—Finchley Model Engineers' Society. Films of Model Engineering interest.

February 24th—Society of Model and Experimental Engineers. Demonstration.

February 26th—Finchley Model Engineers' Society. Whist Drive.

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